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Figure 1. Furnaces and iron works located in piedmont South Carolina, 1775-1860. Base map courtesy of the Department of the Interior, Geologic Survey.

## *William Hill and the Aera Ironworks*

BY THOMAS COWAN

At the opening of the American Revolution and within just two decades of the arrival of the first settlers in the region, several Scots-Irish settlers established iron furnaces in the central Carolina piedmont. The iron-ore belt which made the existence of these furnaces possible lies in a northeast to southwest trend through present Catawba, Lincoln, Gaston, and Cleveland Counties in North Carolina and York, Union, Cherokee, and Spartanburg Counties in South Carolina. Between 1775 and 1860 at least nineteen furnaces were established along this belt (Fig. 1).<sup>1</sup> One of the earliest and most active was the Aera furnace, also known as Hill's Ironworks, situated in northeastern York County, South Carolina (Fig. 2). The development of this works presented special problems for its ironmaster. Locating resources, amassing capital, and coordinating a vast labor force led William Hill to develop a complex industrial operation which produced a wide variety of iron products.<sup>2</sup> In contrast to their counterparts in Pennsylvania and the Shenandoah Valley of Virginia, ironmasters in the Carolina piedmont were faced with lower population densities and relatively poor transportation, factors which effected the potential production and markets of a furnace.<sup>3</sup> As a consequence of these problems, fewer products survive from piedmont furnaces and little has been published about them.<sup>4</sup> However, they were clearly "to the benefit of the Inhabitants in that part of the Country."<sup>5</sup>

The importance of manufactures in the early Carolina back-country was emphasized by John Drayton in his *View of South Carolina* (1802). Drayton contrasted the piedmont with the low country:



*Figure 2. Detail of northeastern York County, South Carolina, from the Atlas of South Carolina by Robert Mills, published in 1826.*

Where the population of the state is convenient to commerce, the manufacturing business is not at all entered into; importations from abroad, supplying all necessary wants. But, as transportation is more difficult to, and from, the middle and upper country; so necessity has, in a proportionate degree, compelled the inhabitants to provide for their own wants. And thus a domestic spirit of manufacturing has arisen, which much prevails in those parts of the state. . . . With the exception of salt and sugar, the people, in the upper parts of the state, may be considered independent of foreign support.<sup>6</sup>

In the upcountry, Drayton noted, “The traveller . . . soon becomes accustomed to the humming music of the hand spinning wheel; and the industry of the loom, often meets the eye.” He described a variety of home textile manufactures including

"Cottons . . . both striped, figured and plain . . . woolens . . . of strong nature, and decent appearance . . . [and] coarse linens, blanketing, woolen bed covers, and cotton rugs." "Conveniently situated throughout the country" were "carpenters, smiths, masons, tanners, shoe, boot, and harness makers, saddlers, hatters, mill-wrights, and all other tradesmen, necessary for rural concerns." Drayton also included an extensive description of William Hill's iron works. Drayton wrote "Hill & Hayne, possess a forge, a furnace, a rolling mill for making sheet iron, and a nail manufactory; all of which, are worked by the waters of Allison's creek." The works was "by far the most extensive in the upcountry."<sup>7</sup>

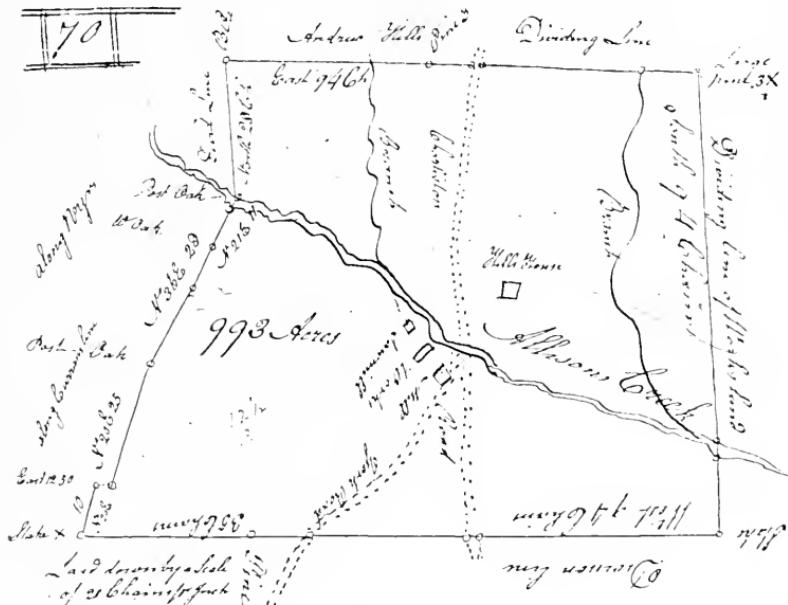


Figure 3. Plat of Hill's iron works and surrounding lands surveyed in 1813. York County Plat Book 1, pp. 449, 451, 453.

By the late 1780s the "Aera and Aetna Furnaces . . . commonly called Hill's Iron Works" had become a landmark for travellers throughout the eastern South Carolina upcountry. This "highly valuable and improvable Works" was situated on the great wagon road stretching from the Shenandoah Valley into Georgia. The works were centered on over 15,000 acres of land along the west bank of the Catawba River, an important transportation and trade route between northeastern South Carolina, western North Carolina, and Charleston. To obtain the necessary

land, Hill had amassed at least sixty-three tracts during the late 1770s and early 1780s (Fig. 3).<sup>8</sup> Standing along the banks of Allison's Creek at the center of the works were two furnaces, each thirty-five feet in height. The Aera works was built about 1778 and rebuilt c. 1786; the Aetna works was built c. 1787. Although both furnaces were kept in blast, the establishment usually was described as "Aera Iron Works" or "Aera Furnace" presumably due to the fact that the Aera works occupied the site first. Both furnaces utilized "Sundry Patterns, [and] Flasks" for casting a wide variety of products.<sup>9</sup> Hill's forge on the same site had "4 fires and 2 hammers, under one roof, and were close to the [Aera] furnace"; this facility was used for converting pig iron into wrought iron. The forge hammers were worked by two wheels, one 16 feet in diameter and 4 1/2 feet wide, and the other 11 feet in diameter and five feet wide. The "nail manufactory" consisted "of two large cutters worked by water, a smaller one worked by hand, and seven iron headers for heading spikes and nails."<sup>10</sup>

Upstream from each furnace was a dam built of criss-crossed logs covered with planks and mud, about 150 feet long and 10 feet high. The Aera furnace employed a massive breast-wheel 26 feet in diameter and four feet wide which powered two wooden air cylinders measuring "5 1/2 by 5 1/2 feet." The Aetna furnace was blown by four such cylinders "worked by a cast iron cog wheel, wallowers and cranks," driven by a water wheel "28 high by 4 1/2 wide."<sup>11</sup> In 1802 John Drayton reported that Hill had replaced the common bellows used at the forge with a trompe, an ancient device which produced an air blast by means of water falling through a vented tube. Drayton observed that

Mr. Hill has much simplified and improved from the original invention, and has adopted to the purposes of the forge. The air of this blast being produced in a particular manner, by the suction of water, which runs violently down a perpendicular funnel, striking against a receiver at the bottom, is forced to ascend a spout which is directed to the fire at the same time that the water is discharged from the receiver; and thus a constant and steady blast is produced, so long as the water is allowed to run.<sup>12</sup>

Hill took advantage of the fall of water from the furnace dams to operate four grist mills and two saw mills. Standing on the

south bank of Allison's Creek and overlooking the ironworks was Hill's thirty-five by forty-foot two-story brick dwelling; surrounding the two works were a variety of other "necessary buildings" including charcoal sheds and workshops.<sup>13</sup>

Drayton reported that the iron works produced a variety of castings:

At these mills heavy cannon have been cast; and iron four pounders, have lately been made for the use of artillery companies, attached to different infantry regiments of this state. Cannon is also cast there, when ordered. Besides these heavy articles, castings, which the daily wants of the inhabitants, of that part of the state require, are made at these works; consisting of, chimney backs, gudgeons,<sup>14</sup> cranks, pots, kettles, skillets, hammers for forges, and boxes for cart and wagon wheels; and other castings for machinery are there also made, agreeable to models and orders delivered."<sup>15</sup>

Drayton's list suggests that Hill employed a substantial contingent of specialized tradesmen. Both the fabrication of patterns for cannon and mill machinery and the process of casting them, for example, necessitated complex and difficult processes. An inventory of the works made in 1798 recorded "20 Tons Pig Iron, 15 pieces Cannon, [and] 300 Castings."<sup>16</sup>

William Hill was born in northern Ireland in 1742 and immigrated to York County, Pennsylvania, where he appears to have spent a significant amount of time before moving to South Carolina.<sup>17</sup> In 1762 he received a grant in Craven County, South Carolina for "One Hundred acres situate . . . on Bowers mill creek Bounded on all sides by Vacant Land."<sup>18</sup> Little else is known of his activities until the mid-1770s when his interest in iron manufacture and an inclination for public life brought him to the forefront of upcountry affairs. Serving under General Thomas Sumter during the Revolution, he rose to the rank of Colonel by 1780.

According to one account Hill was at the battle of Rocky Mount when General Thomas Sumter's troops pursued the "garrison of Colonel Trumbull's New York tories into some log houses which served them as a fort, from which our men could not dislodge them by assault. . . . Colonel William Hill and . . . Jemmy Johnson volunteered to run to a large rock which stood

close to the log houses, each carrying an armful of light-wood. . . . When they reached this rock, they could screen themselves behind it safely, and from thence throw the lighted wood on the roof of the building." Hill and Johnson made the hundred-yard run under fire and while "Hill watched the enemy . . . Johnson ignited the pine and threw the burning brands on the top of the nearest house." However, Hill and Johnson were forced to retreat under fire from the garrison and a "detachment that came out against them," and their effort was thwarted by a "heavy rain."<sup>19</sup> After the Revolution, Hill compiled a history of the campaigns which took place in the region; he supported the actions of General Sumter at the battle of Kings Mountain. *Col. William Hill's Memoirs of the Revolution* was published in 1921.<sup>20</sup>

In the years following the Revolution, Hill was occupied with more than just the operation of his ironworks. His reputation and influence among the area's inhabitants coupled with his need for large amounts of capital and the subsequent connections he developed with low country planters and merchants ultimately drew him into state politics. Between 1779 and 1813 Hill was elected to the General Assembly seven times.<sup>21</sup> He served as a delegate to the state constitutional convention in 1788 voting against ratification of the federal Constitution. In 1789 Hill was appointed commissioner for the inspection and exportation of tobacco from the Catawba River valley.<sup>22</sup> The potential for improved transportation no doubt attracted Hill's attention. Also in 1789 he was appointed commissioner to superintend and contract for dredging of the Broad River, and in 1801 he accepted a similar position to improve navigation on the Pacolet River. He was also a charter member of the Santee Canal Company established in 1786 and the Catawba and Wateree Company of 1787. Moreover, Hill served as justice of the peace for York County beginning in 1785.<sup>23</sup>

William Hill's initial interest in iron manufacture may have sprung from his travels in Pennsylvania and observation of the considerable wealth enjoyed by some furnace owners. Other individuals in the southern piedmont region were also interested in building ironworks at the same time Hill was considering his venture. In the summer of 1775 William Henry Drayton, William Tennent, and Oliver Hart, all of Charleston, made a trip or "mission" to the back country of South Carolina to win settlers to the Whig cause. On 20 August Tennent wrote a letter to the

Council of Safety in Charleston reporting on the progress of the trip. He noted that ". . . Mr. Drayton is gone up to his Iron Works and to the people about Lawsons Fork where he will do some thing."<sup>24</sup> It is apparent that William Henry Drayton was considering the construction of an ironworks. Furthermore, Drayton had obtained a grant on 21 July 1775 for 500 acres of land in the Ninety Six District on a branch of Lawson's Fork Creek called Brown's Branch. His land was bounded on the north by the land of William Wofford. Drayton was never able to develop an ironworks, and died by 1780, but by 1776 William Wofford had begun the construction of a furnace on his own property.<sup>25</sup>

An important source of support for iron manufacture in South Carolina was the result of the rising tension between the colonial government and Great Britain. In the 1770s South Carolina was one of several colonies which began to encourage domestic manufactures in order to ensure the availability of products such as paper, glass, gunpowder, rope, iron, and steel.<sup>26</sup> In November of 1775 the South Carolina Provincial Congress resolved

That a premium of one thousand Pounds currency be given to the person who shall erect a Bloomery [sic] in this Colony, that shall first produce manufactured thereat, one ton of good Bar Iron; a premium of eight hundred Pounds to the person erecting another bloomery . . . and a premium of seven hundred Pounds to the person erecting a third such work . . . These premiums over and above the common prices of such iron.<sup>27</sup>

The Provincial Congress also passed resolves for the production of "good Bar Steel" and "Nail Rods," items which were the common products of a merchant furnace equipped with a finery (forge).<sup>28</sup>

South Carolina was not alone in encouraging iron manufacture. An August 1775 resolution of the Provincial Congress of North Carolina stated:

The Congress taking into Consideration the Encouragement of Manufactures within this Province . . . Resolved That a Premium of five hundred Pounds be given to any person who shall erect and build a Furnace for manufacturing good merchantable Pig Iron and Hollow Iron Ware, and other articles necessary for the use of the inhabitants

of this Province, to be produced to the Provincial Council within two years from this time.<sup>29</sup>

In April of the same year the North Carolina Congress had assigned a committee to repair and hire John Wilcox's furnace on Deep River "for casting pieces of Ordnance, Shot, and other warlike implements. . . ." The commissioners were instructed to "collect from the different parts of the adjacent country persons skilled in putting the said Furnace in proper plight" and to "draw on the Colony Treasures . . . for any sum, not exceeding five thousand Pounds."<sup>30</sup> Legislation similar to that of South Carolina and North Carolina was enacted during 1775 and 1776 by the assemblies of Pennsylvania, Maryland, and Virginia.<sup>31</sup>

William Hill, among others, took advantage of the South Carolina offer by submitting a petition, and on 6 March 1776 the assembly decreed "that a sum of one thousand Pounds, currency, be paid by the commissioners of the Treasury to William Hill, upon his producing and depositing with them proper conveyances and titles of his land, and the improvements thereon, situated on Allison's Creek, a branch of Catawba River."<sup>32</sup> In 1777 the state assembly loaned £1,000 sterling (£7,000 South Carolina currency) to William Hill "to erect an Iron Work."<sup>33</sup> The assembly also granted £6,381 to John Buffington and £4,148 to William Wofford, partners in the development of an ironworks on Lawson's Fork Creek in what later became Spartanburg District.<sup>34</sup> State loans, however, were not sufficient to fund the construction and operation of Hill's works. In March of 1778 Hill entered into a partnership with Isaac Hayne, a planter and merchant of Jacksonburgh, a village west of Charleston in St. Bartholomew parish. According to the partnership agreement, Hill was responsible for construction of "a Furnace, twenty two feet square, well provided with bellows, and every requisite necessary to fit the same for Blast . . . [and] A Bloomery [or forge] with three Fires, completed for Working, together with necessary Houses." Hill was to act as manager and was to hire a clerk, overseer, and ten skilled artisans or "taskable fellows" and provide twenty slaves, as well as the ore land and standing timber. Hayne in turn supplied forty slaves, twenty of whom were males. The agreement reveals that Hill was well along in the development of the works. The partnership supplied what he most needed: a larger labor force.<sup>35</sup>

Before Hill was able to begin construction of a furnace,

however, a geographic and geologic survey of the region was necessary. The availability of iron and limestone deposits, an adequate water supply, and transportation by water or land were a few of the essential factors to be considered. The iron beds used by Hill are located on Nanny (also Ferguson's) Mountain, which only rises several hundred feet above the gently-sloping piedmont terrain. In 1826 Robert Mills described the ridge as "quite isolated" and rising "like a mountain in the plain . . . from the top of it you have a commanding view for about twenty miles round."<sup>36</sup>



Figure 4. Shaft mine near the ridge of Nanny Mountain in northeastern York County, South Carolina. Photograph by Mark Olenki.

Hill's iron mines survive in a wooded area along the northern crest of Nanny mountain. Only one shallow shaft mine (Fig. 4) and several small pits (Fig. 5) are still visible, even though the subsurface deposits stretch several hundred feet along the mountain and were extensively mined in order to supply Aera furnace. A line drawing of one of the pits, based on field work



Figure 5. Pit mine, Nanny Mountain. Photograph by Mark Olenki.

conducted in 1856, appeared in Oscar Lieber's 1857 volume of the *Survey of South Carolina* (Fig. 6).<sup>37</sup> In 1802 John Drayton noted that "the iron ore, is dug from the vicinity of a little mountain, a mile and an half distant from the works; where the iron is found in large masses."<sup>38</sup> Nineteenth-century geologists called the ore "gossan," a form of weathered limonite. A 1906 mineralogical survey of South Carolina reported that the ore from this site contained a large percentage of iron, 68.24%.<sup>39</sup> A notice in the 12 May 1795 Charleston *City Gazette and Daily Advertiser* noted that "nothing is necessary in preparing the ore for use but

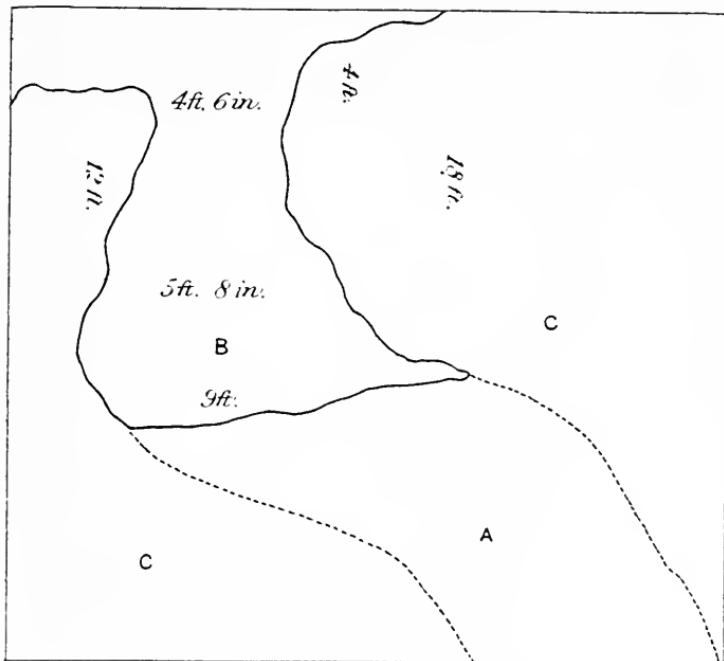


Figure 6. Line drawing rendered in 1856 of the pit mine in Fig. 5, from Oscar Lieber, Report on the Survey of South Carolina (1856), v.1.

burning."<sup>40</sup> Hill's mines lie in an isolated deposit about ten miles southeast of the ore belt which supplied later furnaces in the region. The larger, geologically-defined "Kings Mountain Belt" occurs within a narrow zone generally 1/4 to 1 mile wide traversing about 150 miles in a northeasterly-southwesterly direction through the central Carolina piedmont.<sup>41</sup>

Limestone also was required in the process of smelting or separating iron from other minerals or impurities in the ore. Much less limestone was needed, however, than iron ore. Robert Mills noted that "the lime for fluxing the ore was brought from King's Creek, near Broad River, called Jackson's, properly Stroup's, furnace." Jacob Stroup's ironworks was located about fourteen miles to the west of Hill's furnace.<sup>42</sup> Drayton reported that these deposits were "the only real lime stone rock which is in this state; from which excellent lime is made, for the consumption of Hill and Hayne's ironworks" (Fig. 7).<sup>43</sup> The furnace's hearth and interior lining also required seasonal replacement with a variety of rock, often sandstone, that would stand the heat of the blast without melting. Drayton recorded that "the hearth stones used

for the works are within a mile of them, in great plenty, of a course gritty nature, resembling a grind stone; dressing easily, and standing well the heat of the furnace.”<sup>44</sup>

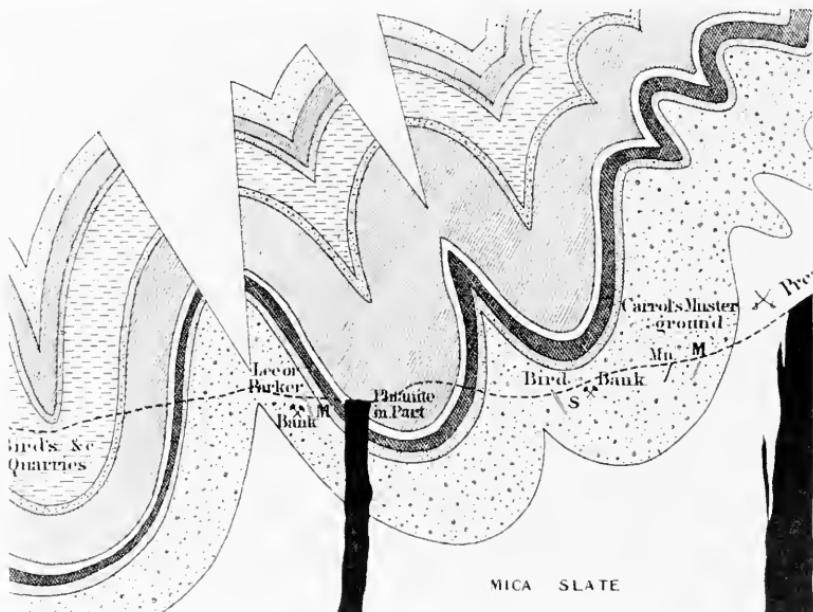


Figure 7. Geologic cross section of the King's Mountain ore belt where it crosses extreme northeastern York County. Limestone used in Hill's furnaces was mined in this belt as well. From Oscar Lieber, Report on the Survey of South Carolina (1857), v. 2.

The charcoal used to fuel Aera furnace was made from the abundant hardwood stands on the 15,000 acres of land which Hill and his various partners purchased between the mid-1770s and the 1790s (Fig. 8).<sup>45</sup> A 1795 newspaper description of the works noted that “four to six loads of coal may be hauled per day: and that before there will be any occasion to go an improper distance for coal, the woods will bear a second cutting. Farmers are at present willing to give their wood gratis where they are clearing, it being to their benefit to get it off their land, reserving fencing.”<sup>46</sup>

The average iron works in the region often employed two dozen men just for chopping wood. Colliers converted the timber into charcoal by stacking it in large piles and covering it with a layer of soil, allowing the wood to burn slowly.<sup>47</sup> The iron industry’s thirst for fuel led to the deforestation of large areas of the countryside surrounding furnaces and forges. These

denuded areas were often labelled on maps as "coaling grounds"; an 1858 geologic map of western York County shows such timbered-off lands.<sup>48</sup>

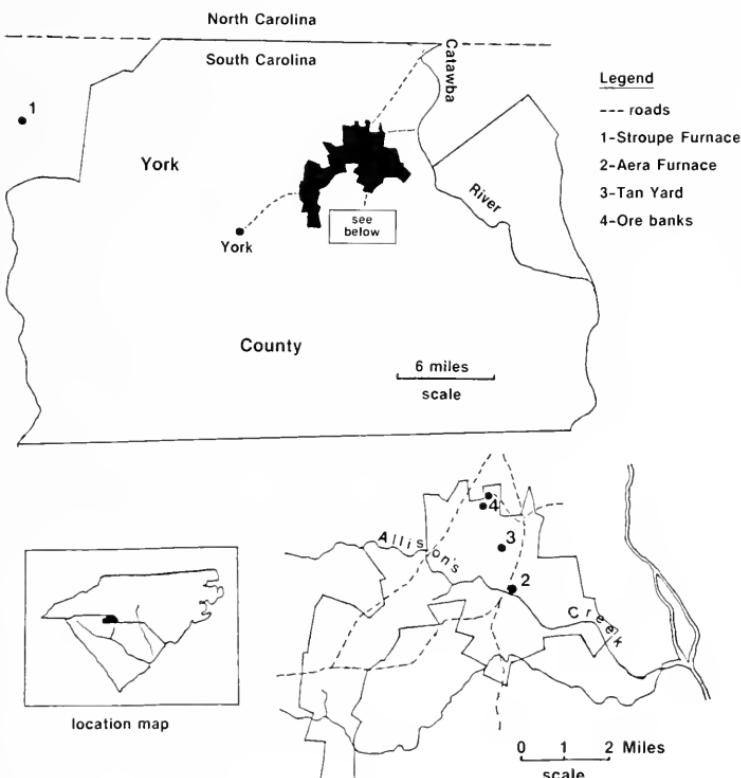


Figure 8. Map of the lands controlled by the Aera furnace c. 1813 based on York County plats.

The magnitude of land acquisition by furnaces for the purpose of obtaining fuel is apparent in an 1804 inventory of the acreage owned by Vesuvius Furnace in Lincoln County, North Carolina, about 30 miles north of Hill's works. The inventory recorded 65 land conveyances for 46 properties comprising over 5,000 acres. Some of the properties were noted as having been "all cut down," "one half cut," "part cut," "one half cut, the other bad timber," and "all cut down but 4 or 5 [charcoal] pits of wood." In all at least six hundred acres or nearly one square mile of timber had been cut in the first nine years of the furnace's operation.<sup>49</sup> A similar pattern occurred at Hill's ironworks.

According to a 1795 sale notice, Aera furnace used “from 4 to 500 bushels” of charcoal to make one ton of iron and normally produced 17 or 18 tons [of iron] per week.<sup>50</sup> Calculating from these figures the Aera furnace used 6,800 bushels of charcoal weekly or perhaps 136,000 bushels in a typical five-month blast. At the regional average of 40 bushels per cord and 35 cords per acre, the Aera furnace weekly consumed 170 cords or almost five acres of timber.<sup>51</sup> Therefore, a five-month blast could have led to the deforestation of as much as 100 acres of timber.

Hill received the £1,000 state loan on 25 August 1777. He completed construction of the Aera furnace by late November of 1779, when Isaac Hayne advertised in the Charleston *Gazette of the State of South Carolina* that the Aera furnace “is now in blast,” and was “the first and only one ever erected in the State of South Carolina.” Articles which “may be had, by wholesale or retail,” included bar iron, smith’s and forge anvils and hammers, “Salt Pans, Pots of all sizes, Kettles . . . Skellets, Dutch Ovens . . . Stoves . . . and 2, 3, or 4 Pounders, with Balls to suit . . . or any other casting in Iron.”<sup>52</sup> By the summer of 1780 significant but undescribed dispersions to Hill for production of war materiels were recorded in the state treasury ledger; these payments totalled £20,000 in what by that time was inflated currency.<sup>53</sup> Hill later testified that he had “Suppl[ied] the state With One hundred and Six tons Castings of Cannon Balls, Shells, Camp Kettles, and Other utensils for the army.”<sup>54</sup>

Despite the state loans and Isaac Hayne’s support, Hill encountered several setbacks in 1780 and 1781. The Journal of the state house of representatives recorded that

The great Utility of those Works by Supplying the State with Cannon, [and] Shot . . . had attracted the Notice of the Enimy [sic], Who Considering these as public Works and an Object, detached a Strong Party from Rocky Mount to Destroy them . . . [in June 1780, with loss] of furnace, forges, Grist mill, Saw Mills, Store Houses, Dwelling Houses and Every other building on the place, With Stock of horses, Cattle, & Utensils, and Waggons besides twenty Negroes Carried off by the Enimy [sic] and not yet Recovered.<sup>55</sup>

To make a bad situation worse, in August of 1781 Hill’s partner, Isaac Hayne, was convicted of breaking parole and hanged by a British military court in Charleston.<sup>56</sup>

Hill immediately sought to rebuild the works and convinced the executors of Hayne's estate to petition the General Assembly for assistance. In February 1782 the committee "on the petition of the Ex. of late Col. Hayne" reported "that the rebuilding of the Iron Works was to the benefit of the Inhabitants in that part of the Country" and recommended that "fifty working Negroes, which may be reserved out of the confiscated Estates/ should confiscation take place/ as a bounty for the second year's service of our troops, be lent to the said Exor. to be employed in re-building the said works."<sup>57</sup> No record of such assistance has been found. Hill was not able to rebuild Aera furnace until 1786 when Daniel Bourdeaux, Joseph Atkinson, and Pierce Butler together advanced £4,350, each receiving in return 1/4 interest in the ironworks.<sup>58</sup> Bourdeaux, a Charleston merchant and planter, was co-owner of at least three trading vessels, an importer of slaves, and owner of several sawmills on the lower tributaries of the Savannah River. In 1779 Bourdeaux joined Atkinson and Butler in the firm of Joseph Atkinson and Company, speculators in back-country land.<sup>59</sup> The three partners were probably still together in 1786 when they advanced William Hill the money.

The Aera furnace must have prospered in the seven years following 1786. In 1793 Hill and his partners purchased the "Lincolnton Forge, Washington Furnace, and . . . Sundry tracts . . . for the purpose of creating Iron Works in Lincoln County," North Carolina. The site of Washington furnace (Figs. 9, 10) and ironworks is located about twenty miles northwest of Aera and Aetna furnaces, and were constructed by John Sloan between 1786 and 1788.<sup>60</sup>

In 1793 Hill lost two of his backers when Bourdeaux and Butler had to relinquish 100,000 acres of piedmont land purchased for speculative purposes, and Bourdeaux experienced business failures and defaulted on several debts.<sup>61</sup> At about the same time a long battle between Hill and the state treasury began over Hill's failure to repay his 1777 loan. Unfortunately for Hill, he had been required to mortgage the ironworks property to the state in 1777 as collateral for the loan. A long series of exchanges began in 1791 involving Hill, treasury officials, the general assembly and at least two governors.

Hill first petitioned the general assembly in January of 1791, recalling "the . . . Early round of the late War this Country being in Great distress by Reason of Shutting up her ports and Cutting off her foreign trade, the state encouraged the Manufacturing of



Figure 9. The ruins of Washington furnace stack from the casting arch side. Constructed in Gaston County, North Carolina in 1788, the furnace was purchased by William Hill in 1793. Photograph by the author.

bar Iron," enabling Hill to obtain a loan. "Through great personal labor and industry attended with numerous difficulties" Hill completed the furnace and "the Garrison of Charleston was,

during that memorable Seige, almost wholly supplied from the Aera Furnace with Cannon Ball and other necessary Articles of iron manufacture." Hill argued that when he received the 1,000 Pounds sterling in 1777 it was "greatly depreciated" and the workmen "refused to receive it." Since his works were later burned and his partner executed, Hill contended that his business and the estate of his former partner "would be greatly distressed if not entirely ruined . . . should a repayment of the loan be insisted upon." Hill "humbly" asked the assembly to release him from the loan and that the mortgage be cancelled.<sup>62</sup>



Figure 10. The interior of Washington furnace from top. Photograph by the author.

The committee assigned in December of 1793 to consider the petition felt that Hill's allegations had not been substantiated and "recommended that the mortgage remain."<sup>63</sup> Two years later, however, another committee recommended that Hill "be exonerated from the whole of his debt" considering the "difficulties he encountered in erecting his Iron Work, the advantages this State had received from them in the hour of danger, and the immense loss sustained by their becoming an object of the anger of the Enimy, who in a few hours laid waste with fire, not only his works, but many buildings on the place."<sup>64</sup> The report was sent to the House of Representatives but appears to have not been further considered. Hill sought alternative means to settle

his accounts, writing Governor William Moultrie in December of 1794 that he was “informed the Fortifications and Arsonals in this State are in want of Arms, Cannon, and Cannon Ball & Shot,” and that he could furnish the state with these articles.<sup>65</sup> In 1797 Hill contracted for “thirty six field pieces & five hundred swords.” To garner support for the contract, Governor Charles Pinckney went before the general assembly and noted the “peculiar hardships of the case.”<sup>66</sup>

In May, 1795, the shares in the “Aera & Aetna Iron-Works” held by Pierce Butler and Daniel Bourdeaux were advertised for “sale by public auction, in the City of Charleston, to the highest bidder.”<sup>67</sup> A year later William Edward Hayne, the youngest son of Hill’s first partner, Isaac Hayne, purchased those portions, advancing Hill £5,000 he had collected from twenty-five wealthy backers in Charleston (see Appendix). At least five of the backers were Charleston merchants, and several others were state legislators. Isaac Hayne had possessed considerable capital, owning a rice plantation near Jacksonburgh and at least ninety slaves at the time of his death in 1781, and Daniel Bourdeaux was a prosperous merchant.<sup>68</sup> Hayne built a house near the iron works and in 1798 entered a partnership in which Hill was “to superintend, conduct, and manage the works in all branches thereof [sic],” while Hayne became responsible for management of all monies and record keeping.<sup>69</sup>

Hill continued efforts to resolve his debt. A senate committee recorded in 1796 that Hill had submitted another petition “accompanied with sundry letters to, and from Colonel William Hill.”<sup>70</sup> In 1798, 1810, and 1812 Hill submitted longer petitions, insisting that “Your Petitioner has never brought forward any Claims for indemnities which were promised him by the Government at that time, and which he thinks, he might have justly done,” but his debt and mortgage were never cancelled.<sup>71</sup> Nevertheless, Hill continued to operate the furnaces, hiring local workers and employing a large number of slaves. An inventory of the works made in 1798 reveals that slaves filled all the key positions required to keep the furnace and forge in operation. These workmen included forgemen, a blacksmith, a miner, seven colliers (charcoal burners), and four wagoners to haul ore, limestone, charcoal, and finished goods. At the furnace, a slave named Flanders was designated as the “filler.” Another slave, Charles, was the gutterman; he was responsible for opening the gates connecting pattern impressions which were rammed into the sand of the

casting floor. The general direction of these activities was coordinated by the "keeper to the furnace," a slave named York.<sup>72</sup>

The occupations of thirteen of the thirty-four adult male slaves are not listed. They consisted of semi-skilled and unskilled laborers who were involved in a variety of activities and shifted as needed between agricultural and furnace or forge work. Fifty-four women and children are also listed in the 1798 inventory, and were probably employed in a similar manner. The inventory indicates that many of the adult slaves were in their forties and fifties; many had mature children. A newspaper notice of 1795 reported that "Most of these negroes have been employed for a considerable time at the works, and are very useful and knowledgeable as forgemen, blacksmiths, founders, miners, and various other occupations."<sup>73</sup> The total number of slaves at the ironworks remained high from as early as 1778 until at least 1810.<sup>74</sup>

The large numbers of slaves owned by the works reflects a significant investment of capital. In 1790, 75% of the households in York District owned no slaves, while 12% owned three or less. Only fourteen persons owned more than ten; the largest number of privately-owned slaves was only 26. The Aera works owned 82 slaves, 9% of the district's 908 slaves.<sup>75</sup> Similarly, in 1810, one plantation owner, the largest slaveholder, had but 51 slaves in comparison with Hill and Hayne's 123 slaves.<sup>76</sup> The sharp rise in the total number of slaves owned by the works between 1798 and 1810 may be attributable to an increase in the production of cash crops. As their iron business declined, it seems likely that Hill and Hayne diversified, increasing their agricultural activities. The 15,000 acres owned by the works contained large amounts of fertile bottom lands for tobacco and cotton production.

The use of slaves did not lessen Hill's dependence on white laborers hired by the job, or for specific periods of time. A receipt book kept at the furnace between April, 1798 and February, 1802 lists thirty-six persons who sold agricultural goods or provided labor to the furnace. Several local farmers were hired on a monthly basis. On 23 November 1798 Hill paid Rolly Harp \$10 "for fetching sundry patterns from William Hammond between the Tyger & Enoree [rivers] and on 12 December, Harp received \$3 for "one month work." Between April and November of 1798 Henry Alexander, Benjamin Carr, Richard Cluten, and Rolly Harp were all paid for month-long periods of work. Skilled laborers also were hired to execute key tasks. On 15 January 1800 Peter Cherry received \$10 "for a load of ore" and on 27 October 1799

Jacob Forsyth received \$40 "for putting in the Hearth & Blowing the Aetna Furnace to this day." Forsyth, an itenerant founder, placed an advertisement for File's Iron Works located in Jackson County, Georgia in the 5 January 1797 Augusta *Southern Sentinel and Gazette of the State* attesting that "I do hereby certify that I have blown several Furnaces on the continent, during the last twenty years." Hired laborers and creditors were also paid in the products of the furnaces and forge, a common practice of merchant furnaces of the period. On 28 August 1798 Robert Cherry "rcd. of Hill and Hayne 1,620 1/4 lbs Castings, being so much owned to me by Col. Wm. Hill" and on 3 January 1800, Jacob Forsyth received "two tons Castings & half a ton of bar iron."<sup>77</sup>

Newspaper advertisements indicate that the furnace offered a broad range of products. The 1795 announcement for the sale of the iron works reported that "The greatest part of the iron is made into ovens, pots, flat irons, gudgeons, machinery, cranks, and at present there appears to be a great demand for machinery for rice-mills, grist, wind and saw mills." The advertisement also noted that the furnace produced "17 or 18 tons per week . . . [but] it is supposed by founders, would make 25 tons per week. . . . The current price per pound for flased ware is 4 3/8, open castings 3 1/2 d. sterling; all pieces under 20 lbs. are sold by hand."<sup>78</sup> The "flashed ware" was hollow ware such as skillets and kettles which were run in two-piece sand molds rammed up in matching wooden frames or flasks; "open castings" were flat objects run directly in the sand of the casting floor. On 25 January 1797 Hill and Hayne advertised in the Charleston *Carolina Gazette* "that any kind of MACHINERY for SAW and GRIST MILLS, RICE MACHINES, &c. &c. can be cast . . . delivered at the Works for One Hundred and Thirty Dollars per ton, or in any part of this state for One Hundred and Sixty Dollars per ton."<sup>79</sup> These types of goods would have been in demand over much of South Carolina and adjacent North Carolina. The casting of "RICE MACHINES" or rice pounding mills, a 1787 invention of Jonathan Lucas, represented production of the most up-to-date agricultural machinery available.<sup>80</sup>

In the 17 August 1789 Charleston *City Gazette, or the Daily Advertiser* Hill's earlier partner, Daniel Bourdeaux, advertised "A COMPLEAT SET OF Machinery Iron FOR a wind saw mill, weighing about two tons, cast at the Aera Foundry, by particular order, but arriving too late for the purpose of the person who ordered it, is now for sale at Mr. Lamotte's wharf, and may be

informed of the price, by applying to Daniel Bourdeaux."<sup>81</sup> As a merchant, Bourdeaux may have sold a large quantity of items produced at the furnace. In 1784 Bourdeaux advertised goods at his "STORE" at No. 48 Bay Street; the items he offered included "Bar iron . . . Anvils . . . and Nails assorted."<sup>82</sup>

Hill also produced firebacks, which were used to protect the brick lining of fireplaces from repeated heating and cooling. These were open castings, run directly on the casting floor. At least four firebacks survive from Hill's works; they represent two styles. One of these patterns (Fig. 11) probably was run during



Figure 11. Fireback signed "AERA FURNACE, 1778" and bearing the initials of William Hill and Isaac Hayne as well as the inscription "LIBERTY OR DEATH." HOA 24", WOA 23", MESDA accession 3119. Seth Sprague Educational and Charitable Foundation purchase fund.

the furnace's first year of operation and are marked with the familiar Revolutionary slogan "Liberty or Death" in addition to the initials "WH" and "IH" as well as "AERA FURNACE 1778."



Figure 12. Fireback marked "AERA FURNACE." HOA 21½", WOA 30", MESDA accession 3075.

The other pattern (Fig. 12) of fireback cast at Hill's works is tripartite in form, with a large segmental arch and a small cyma-recta curve at both sides of the arch. A simple ovolо molding follows the edge of the arched top and side curves. The pieces are marked "Aera Furnace." The two examples of this style of fireback have Charleston histories. In the 16 June 1800 *City Gazette and Daily Advertiser* Charles Graves advertised "20 Neat CHIMNEY BACKS And a few sets of Cast-Iron GINBOXES, from the Aera and Aetna Iron Works."<sup>83</sup> The design of these firebacks closely parallel a design employed by gravestone carvers in the counties surrounding the furnace between 1780 and 1820 (Fig. 13). Similar designs were, in fact, employed in funerary art and architectural window treatments throughout the Carolinas during

late eighteenth century and the first quarter of the nineteenth century.<sup>84</sup>

Somewhat similar firebacks were run at nearby Vesuvius furnace in Lincoln County, North Carolina. Vesuvius furnace was in blast by 1794. Possible ties between William Hill and the proprietors of Vesuvius furnace include Hill's partner William Edward Hayne, who married Eloisa Davidson Brevard, the daughter of Joseph Brevard, co-owner of Vesuvius furnace and forge.<sup>85</sup> Future study of Vesuvius furnace and its products should reveal further useful information regarding the early iron industry of the western piedmont.

It is difficult to assess the economic impact of Hill's ironworks upon the economy of the region. No detailed production records survive from Aera furnace; many of the products manufactured by any ironworks during the late eighteenth and early nineteenth centuries were of simple utilitarian nature and were not marked. The vast majority of castings produced by upcountry Carolina ironworks were probably consumed within the region. In his geologic report of 1856, Ebenezer Emmons noted that since the furnaces were located "in the interior of the State, the only market which this iron finds is a home market; smiths generally obtaining the necessary supply from them."<sup>86</sup> Since Hill's works operated more or less continuously for over thirty years, it produced a significant portion of the iron wares such as nails, cast cooking ware, and wrought iron—the blacksmiths' primary raw material—used by the growing population of York District and the residents of surrounding Chester and Lancaster districts as well as residents of Mecklenburg and southern Lincoln counties in North Carolina.

In addition to marketing goods locally and in Charleston, Hill distributed goods at several sites along the fall line of piedmont rivers which provided navigation to the low country. In December 1806 he advertised in *The South Carolina State Gazette and Columbia Advertiser* (Fig. 13) that his products could be purchased from Isaac Hayne in Charleston, John Schulz & Co. in Columbia, Willie Vaughan in Camden, and Thomas Barrett in Augusta.<sup>87</sup> The furnace, moreover, was on the main road linking Camden (and Charleston as well) with the northwestern piedmont. It also was located on the southern spur of the "great wagon road," an important transportation artery which carried the bulk of the settlers emigrating to the southern piedmont after the 1740s. A few references to Hill's Charleston trade are found

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## ÆTNA FURNACE,

IS now blowing, and will continue so during the winter and ensuing spring. All kinds of Machinery, hollow and other castings, will be furnished on the shortest notice, delivered in any part of the state on the most reasonable terms. The great and well known superiority of the metal made at this Furnace, for any kind of machinery, would make it an object for gentlemen building rice and saw mills, to be supplied from hence. For further particulars, apply to Messrs. Waring and Hayne in Charleston, Messrs. John Schulz & Co. in Columbia, Mr. Wilie Vaughan in Camden, Mr. Thomas Barrett in Augusta, or at the Furnace, to

Wm. Ed. HAYNE.

York district, Dec. 1st, 1806.

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Figure 13. An 1806 advertisement from the Columbia South Carolina State Gazette and Columbian Advertiser.

in the Aera furnace receipt book. In April of 1801, the furnace paid James Robertson \$46 "for hauling a load of Woolens and Salt from Charleston" and in March of 1799 gave Gules Harris \$60 for "hauling a load Castings brought down the Country." Hill also traded agricultural products. On 22 December 1801 Hill paid Joseph Stearn \$85 for "2,000 lb of Cotton."<sup>88</sup>

Despite its high iron content, Hill's ore was not of the best quality. Robert Mills wrote in his 1826 *Statistics of South Carolina* that "Hill's works were in operation about 30 years, but the ore was not considered productive enough, and the work was discontinued."<sup>89</sup> After visiting the site of the works and its attendant mines during the 1850s, state geologist Oscar Lieber wrote that "it is now already more than forty years since the company failed." Lieber suggested that the cause was "an inferiority of the iron as bloom iron, occasioned by the same hardness which rendered it particularly suitable for certain castings, a greatly decreased quantity of timber for fuel in the neighborhood, and the expense of transportation."<sup>90</sup> Unpaid debts were another problem William Hill struggled with. Between 1789 and 1794 the "Aera Proprietors" sued seventeen customers.<sup>91</sup>

In 1806 Hill conveyed Washington furnace to his two sons, William Hill, Jr. and Solomon Hill.<sup>92</sup> In 1809 the Hills sold

Washington furnace to John Fulenwider of Lincolnton County.<sup>93</sup> Fulenwider operated a furnace and ironworks at High Shoals on the South Fork of the Catawba River, and in an 1817 tax listing the Washington furnace was included in Fulenwider's holdings as "old furnace land" on 4,740 acres. A clever ironmaster, Fulenwider was taxed in 1819 for 37 slaves and 32,698 acres valued at \$20,940.<sup>94</sup> There is no evidence that Hill continued to operate the Aera and Aetna furnaces after 1810.

On 15 January 1817 a Charleston newspaper reported "Another revolutionary patriot gone! Died at his residence in York District, So. Carolina, on the 1st of Dec. Col. William Hill, in the 76th year of his age."<sup>95</sup> The inventory of Hill's estate reflected the modest wealth he had accumulated during his lifetime. Not surprisingly, iron castings were listed among Hill's household objects, including four pots, one skillet, three ovens with lids, one wash kettle, and one large kettle. Hill left several tracts of land to his sons Solomon and Andrew. Solomon received "500 acres . . . on the great road leading from Bigger's ferry to Hills Iron Works." Hill left his "beloved Wife" two slaves and directed that she be cared for by their sons. Altogether, Hill's total estate of 5,000 acres, 20 slaves, and "sundry household goods" was valued at \$5,910.75.<sup>96</sup>

Hill's sons, were also engaged in iron production; they were referred to as "Iron maker" and "founder" in various county records between 1805 and 1809. In 1802 John Drayton noted that Solomon and William Hill, Jr., had "a set of iron works on a smaller scale [than the Aera Iron Works] situated . . . on the middle Tiger River" in the Spartanburg District.<sup>97</sup> William Hill, Jr., and John Sloan, from whom Hill had purchased Washington Furnace in 1793, also "erected a Bloomery . . . in Edgefield County, [South Carolina] for manufacturing iron ore into bar iron."<sup>98</sup> There is little evidence, however, that Hill's sons continued to operate any of these ironworks after c. 1810.

William Hill coordinated the activities of hundreds of men from widely separated sections of the state, and developed one of the region's first truly modern industrial endeavors. A writer who recalled having seen Hill in the town of Yorkville, "when [Hill] was above 70 years of age" wrote that "he was a man of strong native talent, with few early advantages, shrewd acuteness and a firm integrity of purpose. He was a man of wealth, amassed mostly by his own energy."<sup>99</sup>

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## FOOTNOTES

1. At least twenty furnace sites were identified in two archaeological overview and reconnaissance studies of the early Carolina piedmont iron industry. See Terry A. Ferguson and Thomas A. Cowan, "The Early Ironworks of Northwest South Carolina" A Final Report of Investigations Conducted From 1985-1986 Under Grant No. 45859103 Administered by the South Carolina Department of Archives and History and the Department of the Interior, August 1986; see also "The Early Ironworks of South Central North Carolina," a preliminary report of investigations conducted during 1987, administered by the North Carolina Division of Archives and History and the Department of the Interior. For additional information on furnaces in the southeastern United States see James Larry Smith, "Historical Geography of the Southern Charcoal Iron Industry, 1800-1860" (Ph.D. dissertation, The University of Tennessee, 1982).
2. Two insightful studies of similar iron works of the same period (1776-1815) are Charles B. Dew, "David Ross and the Oxford Iron Works: A Study of Industrial Slavery in the Early Nineteenth-Century South," *The William and Mary Quarterly* 31(April, 1974):189-224; and John Bivins, Jr. "Isaac Zane and the Products of Marlboro Furnace," *Journal of Early Southern Decorative Arts* 12(May, 1985): 14-65.
3. The products of a Virginia valley furnace during this period are discussed in H. E. Comstock, "The Redwell Ironworks," *Journal of Early Southern Decorative Arts* 7(May, 1981):40-80; the Pennsylvania iron industry is addressed in Paul F. Paskoff, *Industrial Evolution: Organization, Structure, and Growth of the Pennsylvania Iron Industry, 1750-1860*, Studies in Industry and Society, no. 3 (Baltimore: The Johns Hopkins University Press, 1983).
4. The iron industry of the Carolina piedmont is examined in Smith, "Historical Geography," pp. 273-320; Ernest M. Lander, "The Iron Industry in Antebellum South Carolina," *The Journal of Southern History* 20(August, 1959):337-355; and Lester J. Cappon, "Iron-Making—A Forgotten Industry of North Carolina," *The North Carolina Historical Review* 9(October, 1932):331-348.
5. Committee Report No. 7, 17 February 1782, Reports of Legislative Committees, General Assembly of South Carolina, South Carolina Department of Archives and History, Columbia, S.C. (hereafter cited as Reports, SCDAH).
6. John Drayton, *A View of South Carolina, As Respects Her Natural and Civil Concerns* (Charleston: W.P. Young, 1802), pp. 149-150.
7. *Ibid.*

8. A listing of sixty-three properties purchased by William Hill, including previous owners and date of purchase, was recorded when Hill formed a partnership with William Edward Hayne in 1798 (York County Deeds, Book E, pp. 145-147, York County Courthouse, York, S.C.); included with this document is "A Schedule or Inventory of the Lands, Negroes and other property belonging jointly & equally to William Hill Sen[a]s[or]., and William Edward Hayne, proprietors & owners of the Aera & Aetna Iron Works taken this first day of January 1798."
9. Ibid.; Charleston *City Gazette and Daily Advertiser* 12 May 1795. This advertisement is the most detailed description of the works, although it is possibly biased due to the circumstances of an anticipated sale.
10. Ibid.; Drayton, *A View of South Carolina*, pp. 149-150.
11. *City Gazette and Daily Advertiser*, 12 May 1795.
12. Drayton, *A View of South Carolina*, pp. 149-150.
13. *City Gazette and Daily Advertiser*, 12 May 1795.
14. "A pivot, usually of metal, fixed on or let into the end of a beam, spindle, axle, etc. and on which a wheel turns," *The Oxford Universal Dictionary*, 1955 ed., s.v. "Gudgeon."
15. Drayton, *A View of South Carolina*, pp. 151-152.
16. York County Deeds, Book E, pp. 145-147.
17. Louise N. Bailey and Elizabeth Ivey Cooper, eds., *Biographical Directory of the South Carolina House of Representatives, 1775-1790* (Columbia: University of South Carolina Press, 1983), 3:339-341.
18. South Carolina Royal Grants, Volume 10, p. 311; South Carolina Colonial Plats, Volume 7, p. 251, SCDAH.
19. Maurice Augustus Moore, *Reminiscences of York* (Greenville, S. C.: A Press, 1981), p. 23.
20. A. S. Salley, Jr., ed. *Col. William Hill's Memoirs of the Revolution* (Columbia, S.C.: The State Company, 1921).
21. Bailey and Cooper, *Biographical Directory*, 3:339-341.
22. In 1786 the South Carolina General Assembly had passed an ordinance directing the establishment of a tobacco inspection warehouse at or near Hill's iron works on Allison's Creek. Thomas Cooper and David McCord, eds., *Statutes at Large of South Carolina*, 10 vols. (Columbia, S.C.: A.S. Johnston, 1839), 4:749-750.
23. Bailey and Cooper, *Biographical Directory*, 3:339-341.
24. David R. Chesnutt et al., *The Papers of Henry Laurens*, 10 vols. (Columbia: University of South Carolina Press, 1986), 10:337-338.
25. Ibid.
26. Arthur Cecil Binning, *British Regulation of the Colonial Iron Industry* (Philadelphia: The University of Pennsylvania Press, 1933), p. 94.
27. Journal of the South Carolina Provincial Congress, 28 November 1775, SCDAH.
28. Ibid.
29. Peter Force, ed., *American Archives*, Fourth Series, 6 vols. (Washington, D.C.: M. St. Clair Clarke and Peter Force, 1840), 3:211-212; William L.

Saunders, ed., *The Colonial Records of North Carolina* (Raleigh: Josephus Daniels, Printer to the State, 1890), vol. 10, pp. 216-217.

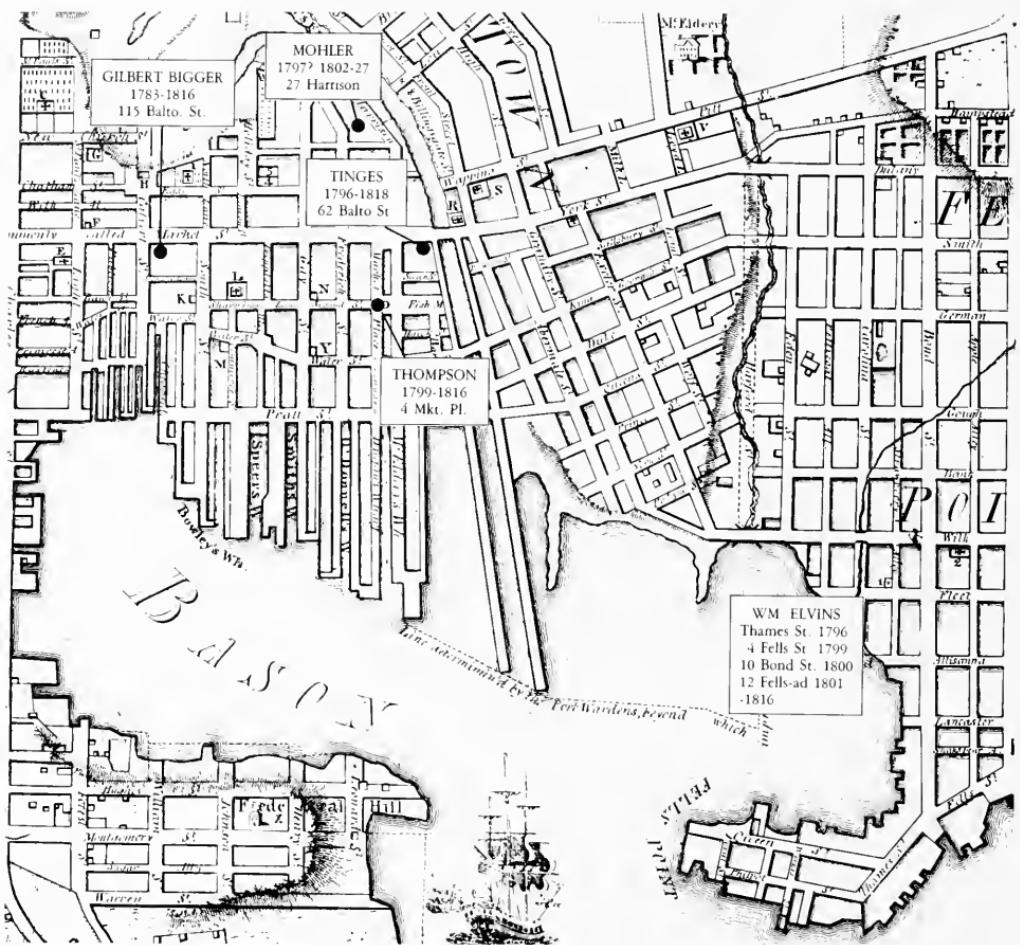
30. Force, *American Archives*, 5:1338; in 1777 John Wilcox received £4,000 from the state treasury to finish his furnace on Deep River in Chatham County. A lack of technical knowledge, a shortage of water for power due to drought, and a damaging flood in June of 1780, however, contributed to the furnaces failure; see Cappon, "Iron-Making—A Forgotten Industry," p. 334. A letter relevant to this, dated 25 March 1777, is in the Chatham Furnace Papers, Southern Historical Collection, University of North Carolina, Chapel Hill.
31. Binning, *British Regulation of the Colonial Iron Industry*, pp. 93-94.
32. Force, *American Archives*, 5:589; William Edwin Hemphill et al., eds., *The State Records of South Carolina Extracted From the Journals of the Provincial Congress of South Carolina, 1775-1776* (Columbia, S.C.: Archives Department, 1960), pp. 221, 226.
33. Public Ledger, 1775-1777, p. 133, and Cash Book, 1775-1777, unpaginated, South Carolina Treasurer's Office, SCDAH.
34. Cooper and McCord, *Statutes at Large of South Carolina*, 4:404-405. The lack of records suggests that Wofford's ironworks probably ceased operation shortly after c. 1780.
35. The original document is in the Brevard Family Papers, North Carolina Division of Archives and History, Raleigh, North Carolina, and is also recorded in Book E, pp. 145-147, York County Deeds.
36. Robert Mills, *Statistics of South Carolina* (Charleston: Hurlbut and Lloyd, 1826), p. 781.
37. Oscar M. Lieber, *Reports on the Mineralogical, Geological, and Agricultural Survey of South Carolina*, 4 vols. (Columbia: R. W. Gibbes, 1856-1860), 1:83-85, plate 2, fig. 2.
38. Drayton, *A View of South Carolina*, pp. 151-152.
39. Earle Sloan, *Catalogue of the Mineral Localities of South Carolina* (Columbia: South Carolina Geological Survey, 1907), pp. 115-116. Sloan's report noted that "This property comprises 120 acres, embracing the ridge of Nanny's Mt., along which extends, from the valley line to the crest, a comb of quartzite mica slate (strike N. 19° E., with a steep dip to the S.E.). From the northern valley line, in contact with this core of quartzite, a bold outcrop of gossan (iron ore derived form pyrrhotite), is intermittently exposed southwesterly for about 4,000 feet, in which distance the elevation increases 220 feet. . . . Beginning on the ridge opposite Nanny's Mt., immediately northeast of the valley line, the iron makes its appearance as a brown ore in decomposed hydromica slates contiguous to and west of the dike. This ore was the main source of supply of two small furnaces from 1760 to 1820. Proceeding towards Nanny's Mt., a ravine exposes, in a shallow pit, pyrrhotite [iron ore] in a vein varying from 3 to 6 feet in width; the enclosing quartzitic mica slates are impregnated with similar material. Ascending the Nanny's Mt. Ridge along a horizontal distance of about 3,400 feet, and 210 feet above the pit, a hard gossan [iron ore] appears with an average width of about 6 feet."
40. *City Gazette and Daily Advertiser*, 12 May 1795.

41. The majority of the iron deposits are located in the geologically-defined King's Mountain Belt, but other more restricted deposits, including Hill's, occur in the Charlotte and inner-piedmont belts adjacent to the King's Mountain Belt. See Oscar M. Lieber, *Reports on the Mineralogical, Geological, and Agricultural Survey of South Carolina*, 4 vols. (1856-1860). An earlier but less thorough study of South Carolina iron deposits and iron works is Michael Toumey, *Report on the Geology of South Carolina* (Columbia: A.S. Johnson, 1848).
42. Mills, *Statistics of South Carolina*, p. 781.
43. Drayton, *A View of South Carolina*, p. 15.
44. Ibid., p. 781.
45. York County Deeds, Book E, pp. 145-147.
46. *City Gazette and Daily Advertiser*, 12 May 1795.
47. Smith, "Historical Geography of the Southern Charcoal Iron Industry," pp. 37-41.
48. See "Geognostic Map of the Itacolumite, Iron & Limestone Region of Union, Spartanburg & York District, South Carolina," in Lieber, *Reports*, vol. 2, (1858).
49. Inventory of lands belonging to Alexander Brevard and Company, 15 July 1803, in the Brevard and McDowell Family Papers, Southern Historical Collection, Chapel Hill.
50. *City Gazette and Daily Advertisor*, 12 May 1795.
51. Smith, "Historical Geography of the Southern Charcoal Iron Industry," p. 220.
52. Charleston *Gazette of the State of South Carolina*, 24 November 1779; South Carolina Treasury Ledger, 1775-1777, pp. 5, 15, 20, SCDAH.
53. Journal, Receipts, and Payments, 1778-1780, pp. 305, 320, South Carolina Treasurer's Office, SCDAH.
54. Michael E. Stevens et al., eds., *Journal of the House of Representatives*, 1791 (Columbia: University of South Carolina Press, 1985), pp. 133-135.
55. Stevens, *Journal of the House of Representatives*, pp. 133-135.
56. Bailey and Cooper, *Biographical Directory*, 3:235.
57. Committee Report No. 7, 17 February 1782, Reports, SCDAH.
58. York County Deeds, Book B, pp. 152-193.
59. Bailey and Cooper, *Biographical Directory*, 3:79-81.
60. Lincoln County Deed Book 17, pp. 26, 32; Deed Book 19, p. 78, Lincoln County Courthouse, Lincolnton, North Carolina.
61. Bailey and Cooper, *Biographical Directory*, 3:79-81.
62. Petition No. 190, 25 January 1791; Petition No. 119, 12 December 1793, Petitions to the South Carolina General Assembly (hereafter cited as Petitions, SCDAH).
63. Committee Report No. 52, 20 December 1793, Reports, SCDAH.
64. Committee Report No. 33, 16 December 1796, Reports, SCDAH.
65. William Hill to Governor William Moultrie, 6 December 1794, Governor's Message No. 621, SCDAH.

66. Charles Pinckney to the South Carolina General Assembly, 14 December 1797, Governors Message No. 706, SCDAH.
67. *City Gazette and Daily Advertiser*, 12 May 1795.
68. "Notice, The Sale of Colonel Hayne's Negroes," *The Gazette of the State of South Carolina* (Charleston, S.C.), 2 August 1784.
69. York County Deeds, Book E, pp. 132-151.
70. Committee Report No. 12, 19 December 1796, Reports, SCDAH.
71. Petition No. 94, n. d., 1798; Committee Report No. 55, 12 December 1798; Petition No. 101, 5 December 1812; Committee Report No. 141, 11 December 1812, Petitions, SCDAH, Reports, SCDAH.
72. York County Deeds, Book E, pp. 147-148.
73. *City Gazette and Daily Advertiser*, 12 May 1795.
74. Population Schedules, York District, First and Third Federal Census, 1790 and 1810; the returns for 1800 are damaged.
75. Population Schedule, York District, First Federal Census, 1790.
76. Population Schedule, York District, Third Federal Census, 1810.
77. Receipt Book, Hill and Hayne Iron Works, 1798-1803 (part of Sheriff's Receipt Book, 1803-1812, William Edward Hayne), SCDAH.
78. *City Gazette and Daily Advertiser*, 12 May 1795.
79. Columbia *The South Carolina State Gazette and Columbian Advertiser*, 20 December 1806.
80. The first rice mill was constructed on a Santee River, South Carolina plantation by Jonathan Lucas in 1787. See John R. Hetrick, "Treatise on the Economics of Rice Production in Georgetown County, South Carolina: The Middle Period, 1786-1860" (M.A. thesis, University of South Carolina, 1979), p. 69.
81. Charleston *City Gazette, or the Daily Advertiser*, 17 August 1789.
82. *City Gazette and Daily Advertiser*, 19 July 1784.
83. Ibid., 16 June 1800.
84. See Francis Benjamin Johnston, *The Early Architecture of North Carolina* (Chapel Hill: The University of North Carolina Press, 1941). The over-window spandrels (p. 116) used on Prospect Hill (1825-1827) in Halifax County and Coleman-White-Jones House (p. 129) (1825-1830) in Warren County, North Carolina are similar to the overall design of the second Aera furnace fireback pattern.
85. *Charleston Courier*, 15 February 1806.
86. Ebenezer Emmons, *Geological Report on the Midland Counties of North Carolina* (Raleigh: Henry D. Turner, 1856), p. 116.
87. Columbia *South Carolina State Gazette and Columbian Advertiser*, 20 December 1806.
88. Receipt Book, Hill and Hayne Iron Works, 1798-1803.
89. Mills, *Statistics of South Carolina*, p. 781.
90. Lieber, *Reports*, vol. 4, (1858), pp. 84-85.
91. Laurence K. Wells, *York County, South Carolina Minutes of the County Court, 1786-1797* (Columbia, S.C.: Brent Holcomb, 1981), pp. 66, 72, 74, 77, 82, 90, 96, 142, 160.

92. Lincoln County Deed Book 23, p. 455.
93. Lincoln County Deed Book 23, pp. 501, 503-04; Deed Book 25, p. 451.
94. Gaston County Historic Properties Commission, "Proposal of Ormand Furnace, Crowders Mtn. Township to the Gaston County Historic Properties Register," December, 1986, unpublished report Survey and Planning Section, North Carolina Division of Archives and History.
95. Charleston *City Gazette*, 15 January 1817.
96. Will and Estate Papers of William Hill, Case 22, file 913, York Estate Papers, County Records on Microfilm, SCDAH.
97. Drayton, *A View of South Carolina*, p. 151.
98. Cooper and McCord, *Statutes of South Carolina*, 5:235.
99. Moore, *Reminiscences of York*, p. 24.

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*Locations of clockmakers' shops in Baltimore overlaid on a detail of WARNER & HANNA'S PLAN of the City and Environs of Baltimore, dated 1801.*

*"A Large and Elegant Assortment":  
A Group of Baltimore  
Tall Clocks, 1795-1815*

JANE WEBB SMITH

At a casual glance, the Baltimore tall clocks examined in this study appear to be stylistically related. The obvious similarities have resulted in the often-published assumption that these clock cases must have been made in the same Baltimore cabinetmaking shop during 1795-1815.<sup>1</sup> A closer look, however, reveals such a large number of differences that the issue of a particular cabinetmaker becomes less important than the reasons for the extensive variety of this group and what they reveal about early nineteenth-century urban trade practices in America, and specifically Baltimore.

The visual characteristics shared by these clock cases are typical of the general styles and Neoclassical decorative motifs inherited from British prototypes. In order to understand Baltimore's interpretation of the Neoclassical style it is necessary to perceive the rapid transition of a small colonial town into a booming port city during the decades following the Revolution. Shops were increasingly required to meet the needs of a growing middle class of merchants, shipbuilders, and other successful tradesmen demanding luxury items of local manufacture. The new age of specialization coincided with the division of labor for cost efficiency and the standardization of the production of components, which was accompanied by piece-work wages. This trade phenomenon coincided with the twenty-year period during which these clocks were made. The relationships between the shifting roles of the clockmaker/retailer, the master and journeyman cabinetmaker, and the artisans who made, imported,



*Figure 1. Tall clock with eight-day movement signed by Gilbert Bigger, Baltimore (working 1783-1816), mahogany and mahogany veneer with poplar and mahogany (glue blocks and door core) secondary. HOA 98 1/2, WOA 22 1/8 at cornice, DOA 10 1/4. Courtesy of David Stockwell, Inc., MRF S-9438.*

and sold inlays should be considered in order to understand the meshing of trades necessary to the manufacture of these clocks. Each component of the tall clock, including the movement, dial, case construction, and inlaid decoration, provides information regarding the complexities of producing, importing, marketing, and purchasing goods at the turn of the nineteenth century.



Figure 1a. Dial.

Charles Montgomery, in *American Furniture: the Federal Period* referred to the tall clock as the "Cadillac of clocks."<sup>2</sup> Since the close of the seventeenth century the tall clock has represented a symbol of prestige to its owners. Its presence in an entrance hall, parlor, or stair landing communicated a visual message of economic security and social standing. Because the tall clock was a major investment, the quantity that survives is quite large. The group examined here consists of approximately twenty examples traditionally attributed to Baltimore. Sixteen of these have been recorded in detail; the remaining four were unavailable for study. Only six (clock numbers 3, 6, 7, 11, 14, 15) have strong Maryland



Figure 1b. Quarter column detail.

provenances, but the history of ownership is not pivotal to inclusion in this study. Further, the name painted on the dial is rarely a clue to the maker of the case, and may represent a clockmaker working outside Baltimore; twelve of the sixteen clocks (nos. 1 through 12), however, do display the signatures of Baltimore makers.<sup>3</sup> Two basic characteristics relate these tall clocks visually. One is the unusual height of the cases, which have hoods with distinctive crown moldings;<sup>4</sup> the second is the use of ornate pictorial inlay in the spandrels of the hoods, particularly variations of a grapevine motif with three clusters of grapes on each side, and a fret-like stringing of interlaced lunettes in the frieze below the hoods. This detail is frequently seen on other examples of Baltimore Neoclassical furniture. (See Appendix IV for an illustrated glossary of clock terminology.)

Overshadowed by Annapolis until after the Revolutionary War, Baltimore grew from a small town of twenty-five dwellings, two taverns and a church in 1752 to a city of 13,503 in 1790. The population doubled to over 26,000 by 1800.<sup>5</sup> Because of its advantageous location at the mouth of the Patapsco River, Baltimore's mercantile trade thrived, as did other local industries such as flour mills, iron furnaces, and shipyards. The post-Revolutionary economic boom drew an influx of new residents

to the city, many of whom were tradesmen from Britain and Germany.<sup>6</sup> This rapid growth created the need for new housing and household goods; by 1783 the town boasted 1100 shops and 1900 houses. In 1796 a visitor to Baltimore observed that the city was "after Philadelphia and New York, the most important trading port in America."<sup>7</sup>



*Figure 1c. Hood.*

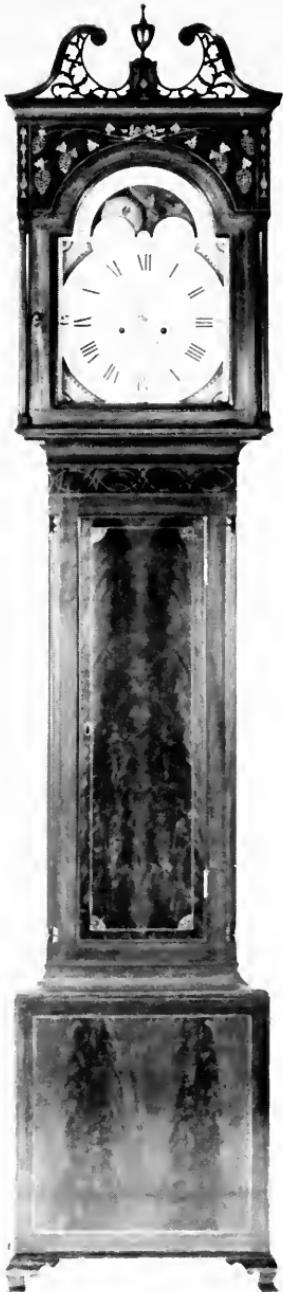
By 1810 seventy to eighty-five cabinetmakers served Baltimore's population of approximately 46,500, a startling contrast to the existence of only two major cabinetmaking shops there before 1780.<sup>8</sup> The two early shops were those of Gerrard Hopkins (1742-1800) and Robert Moore (1723-1787). These establishments were relatively small, receiving most of their custom in the form of bespoke work. They suffered from intense outside competition from Europe, New England, and most particularly Philadelphia. Baltimore's proximity to Philadelphia had

a significant stylistic effect upon the city's cabinetmakers before the Revolution, a time when Baroque and Rococo modes prevailed.



*Figure 1d. Pediment detail.*

After the war, however, the emergence of the Neoclassical fashion, coupled with the rapid rise in the size of the cabinet trade, encouraged the development of a recognizable Baltimore style. During this period, New York became the most thriving American trade center, radiating stylistic influence throughout the mid-Atlantic region. There are, in fact, greater similarities between Baltimore and New York inlaid furniture than between Baltimore and Philadelphia work of the same period. After the 1783 Treaty of Paris restored American trade with Britain, the



*Figure 2. Tall clock with eight-day movement signed by William Elvins of Baltimore (w. 1796-1841), mahogany with mahogany veneer, poplar and white pine secondary. Pediment tracery reconstructed. HOA 98 1/4, WOA 20 3/4 at cornice, DOA 10 3/4 at feet. MESDA accession 2651.*



*Figure 2a. Hood.*

market was flooded with imported goods and it appeared that domestic manufacturing would again have to struggle against the competition. However, three events nurtured the support of locally-made products and the already-burgeoning coastal trade: political unrest in France and in Ireland, which by 1798 had lost all hope of independence from England, thereby encouraging masses of merchants and tradesmen to emigrate to America;<sup>9</sup> European involvement in the Napoleonic Wars from 1793-1808, which curtailed most trade; and the introduction of Whitney's improved cotton gin in 1793, which fostered the growth of immense new wealth in the South. Before the Revolution, most

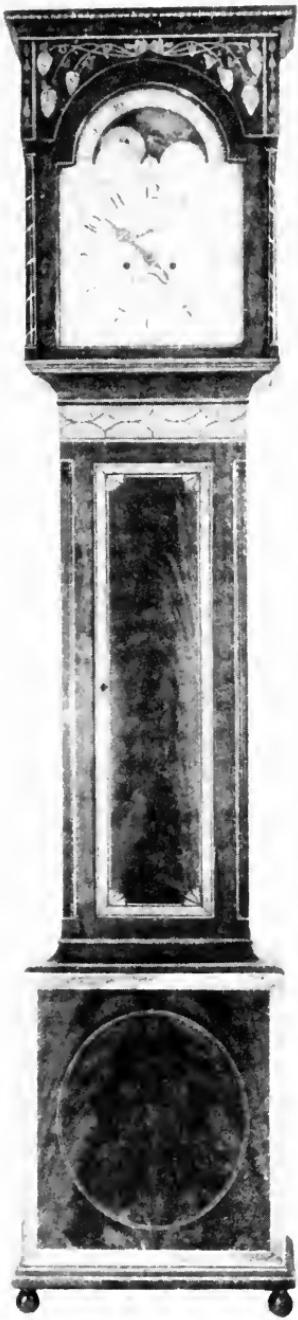


Figure 3. Tall clock with eight-day movement signed by William Elvins of Baltimore, mahogany with mahogany veneer and poplar secondary. Feet and bed molding replaced. HOA 91, WOA 20 1/4, DOA 10 1/2. From Baltimore Furniture, 1760-1810 (Baltimore: The Baltimore Museum of Art, 1947), p. 147. Courtesy the Baltimore Museum of Art. Private collection.

venture-cargo trade on the eastern seaboard originated in New England. In such ventures, the captain was obligated to sell the goods and to invest the proceeds in the staples of various ports, including molasses, sugar, logwood, mahogany, and slaves.<sup>10</sup> By the nineteenth century the middle-Atlantic states, ideally located for the inexpensive shipment of products to the South as well as to Europe, had largely overcome European competition. This surging demand for domestic goods, particularly in the trade originating in New York and Philadelphia, changed the structure of urban American trades.<sup>11</sup>



Figure 3a. Column detail. Photograph by the author.

During the first quarter of the nineteenth century, the steadily rising population, coastal trade boom, and demand for indigenous products created labor problems for which the cabinetmaking trade was initially unprepared. Bespoke work was a totally different matter from the sort of custom which shops increasingly received after 1800. This included "order work," or goods intended for export, "stock work," which consisted of ready-made products for a warehouse or "wareroom" and "market work," less-expensive items sold in the public marketplace.<sup>12</sup> Traditionally, an indenture in the cabinet trade was intended to teach apprentices the values of quality workmanship. The master of the shop had worked side-by-side on a personal level with not only apprentices, but also his journeymen. The shift from a primary emphasis upon quality furniture destined for individual clients to the production of an increasing percentage of work intended for either inventory or export resulted in labor problems in the



Figure 3b. Hood spandrel detail. Photograph by the author.

cabinet shops of major coastal cities.<sup>13</sup> Shop masters became entrepreneurs while journeymen found it necessary to work longer hours to meet export quotas, yet this productivity was not met with increased wages.<sup>14</sup> In fact, the competition for lower consumer costs in the coastwise trade necessitated lower wages for laborers as well as an increased production of lower-priced goods in order for a shop owner to show a profit. From the need for cost-efficient production, therefore, emerged two seemingly contradictory labor concepts: standardization and specialization. Standardization primarily applied to urban journeymen, who in the midst of the sporadic employment cycles of the eighteenth century and the increasingly complex system of mass-production depended upon piecework to provide a stable income. By standardizing the shapes and dimensions of furniture components made by piecework, as well as fixing the cost of labor for each



Figure 3c. Hood fascia detail. Photograph by the author.

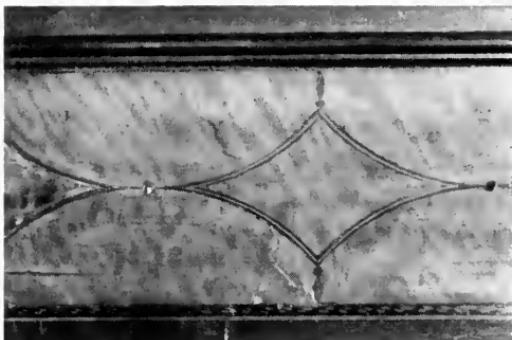


Figure 3d. Waist detail. Photograph by the author.

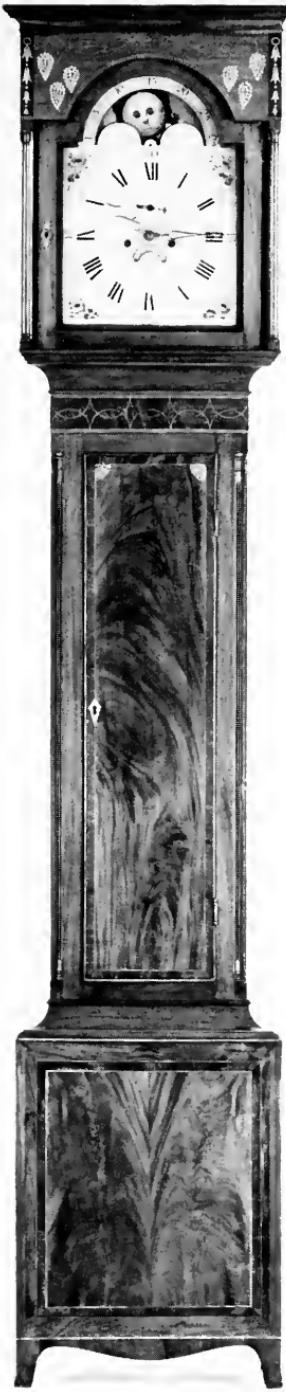
part, the journeymen and the masters were able to establish a compromise that lessened the possibility of further economic catastrophe for both.

The first evidence of this American labor compromise occurs in the 1795 *Cabinet-Makers' Philadelphia and London Book of Prices* which was revised in 1796. In that year New York followed Philadelphia with its own *Journeymen and Cabinet Makers' New York Book of Prices*. Both were based upon the 1793 *Cabinet Makers' London Book of Prices*, which was a revision of the first edition published in 1788. The introduction on the title page of the 1793 London version sums up the extent to which these price books were intended to serve as a solution to possible future conflict between journeymen and their masters:

Many articles in the first edition of this work not being clear enough to prevent different constructions being put on them both by journeymen and their employers . . . which has been the cause of frequent, and in some cases almost irreconcilable disputes, betwixt them; in order, therefore, to prevent . . . the like evil occurring in the future, it is requested that both parties will be particular in making themselves acquainted with the following.<sup>15</sup>

By standardizing prices for piecework, these price books made a wage system for journeymen predictable and manageable.

Not included in the price books, however, are prices for components supplied by specialists such as turners, carvers, and inlayers, all of whom had skills beyond the usual realm of cabinet journeymen. This division of tasks was another step toward cost-



*Figure 4. Tall clock with eight-day movement signed by William Elvins of Baltimore, mahogany with mahogany veneer, poplar and yellow pine secondary. HOA 98 1/8, WOA 21 3/4, DOA 10 7/8. Courtesy the Baltimore Museum of Art, photograph by Breger & Associates, Kensington, Md.*

efficiency in increased production. A particular urban cabinet or chairmaking shop employed journeymen to construct the basic piece, and the specialist was engaged to embellish the piece according to specific requirements. Veneers, cross-banding, stringing, and fluting were within the abilities of the journeymen and were covered in the price book tables, but pictorial or patterned inlays either were executed by local specialists or were imported. It is usually assumed that these artisans operated as inside contractors in various cabinet shops, although some no doubt received unfinished furniture to ornament on their own premises. In either case, the final product was a combination of



Figure 4a. Hood. Courtesy the Baltimore Museum of Art, photograph by Breger & Associates.

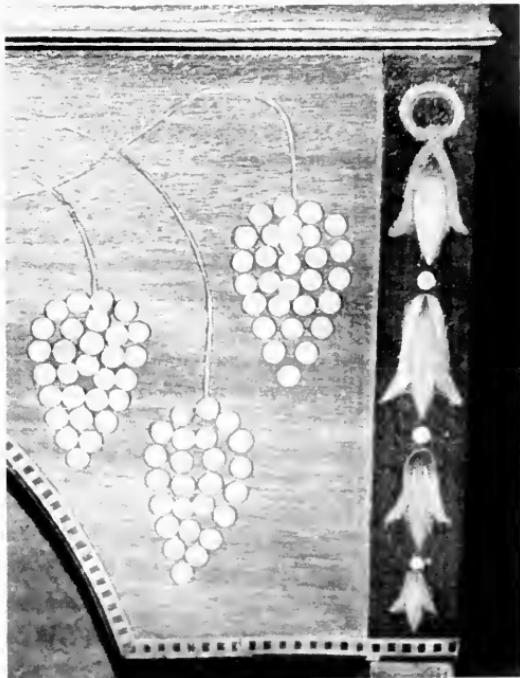


Figure 4b. Hood spandrel detail. Photograph by the author.

the skills of the journeymen who produced both components as well as assembled carcasses, and those of the specialist who executed certain aspects of decoration.

The production of a tall clock most particularly called for a division of labor, not only in the casework, but in the clock movement as well. The design of the mechanical aspects of the movements had been perfected before the end of the seventeenth century and remained essentially unchanged until the tall clock went out of fashion in the nineteenth century. Christian Huygens (1629-1695), with his application of the pendulum, had combined the Galilean-Newtonian principle of an equal and opposite reaction with the crown wheel escapement as a means of regulating the effect of a suspended weight upon the going train. Huygens' standardized pendulum was 39.14 inches; it provided a one-second "tick" as well as dictating the minimum length of a clock case, often at least eight feet on American examples. Two types of clock movements were commonly available in the eighteenth century. One was the thirty-hour type which uses a single weight to drive the going and striking trains and which usually has no

winding holes in the dial. The more costly eight-day movement has separate trains, and the dial is pierced with two winding holes for access with a crank to raise the two weights; these movements usually have seconds-hands. All sixteen clocks in this study are of the eight-day variety.<sup>16</sup>

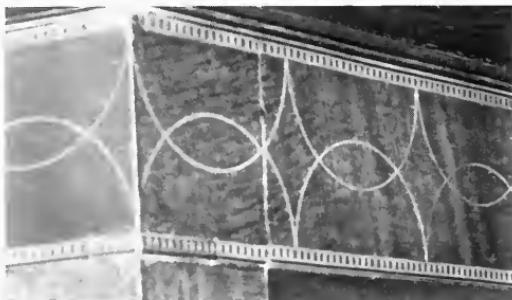


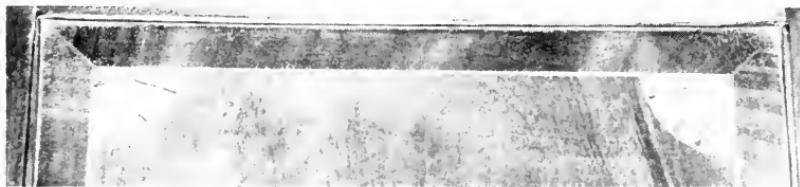
Figure 4c. Waist frieze detail. Photograph by the author.

In England the transition from the bracket clock with exposed weights<sup>17</sup> to the fully-enclosed tall clock began during the reign of Charles II (1660-1685). The golden age of the British brass-dial clock continued into the mid-eighteenth century. In coastal America brass-dial movements were actively produced for only about sixty years preceding the Revolutionary War, but the brass dial persisted in the back country into the nineteenth century. Before the Revolution, relatively few wealthy Baltimoreans supported small local shops that made brass-dial clocks, since English tall clocks appear to have been more fashionable among the gentry. As long as the raw materials were available, however, early Baltimore clockmakers at least could repair imported clocks. After the war, brass was scarce, and imported English clock and watchmaking materials flooded the local market by the 1780s. The expensive engraved brass dial in England was replaced by the mass-produced white-painted clock dial. These were first manufactured in Birmingham, England; the 28 September 1772 *Birmingham Gazette* carried the advertisement of "Osborne and Wilson, Manufacturers of White Clock Dials in Imitation of Enamel, in a Manner entirely new, have opened up a Warehouse at No. 3 Colmore Row, Birmingham, where they have an Assortment of the above mentioned Goods. . . ."<sup>18</sup> Three innovative concepts that influenced the degree of consumer choice were promoted in this advertisement. The first of these was that the sheet iron dials were not enameled, but were japanned "in



*Figure 4d. Hood glue blocking. Photograph by the author.*

Imitation of Enamel.'" The use of japan varnish was less expensive than genuine enamel, which required vitrification in a kiln. Further, japanning was a more successful finish for clock dials than enamelling, a process better suited to watch dials. Secondly, merchants and jobbers stocked ready-made dials, suggesting the vast quantity in which these dials were produced for export. Finally, the availability of an assortment of dials was another product of the age of standardization. The initial development in England of the white-painted dial was an aesthetic option rather than an economic necessity. The new and modish Neoclassical motifs lent themselves well as decoration for the light, easy-to-read white dials, rapidly making them more fashionable than brass dials, which were associated with the Baroque and Rococo styles.



*Figure 4e. Waist door inlay. Photograph by the author.*

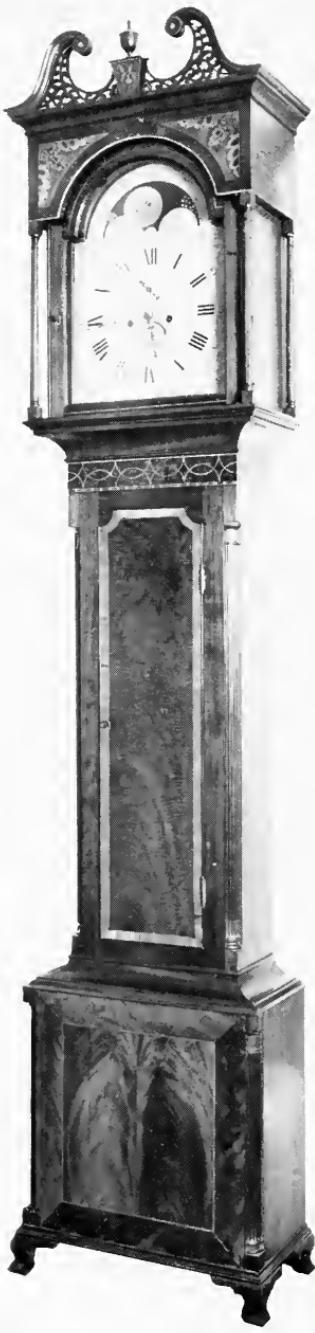


Figure 5. Tall clock with eight-day movement signed by William Elvins of Baltimore, mahogany with mahogany veneer, poplar, yellow pine, and walnut (door core) secondary. Pediment replaced. HOA 96 3/4, WOA 21 1/4, DOA 11. MRF S-10517.

The partnership of Osborne and Wilson terminated in 1777, but the firm's invention of a false plate, which was a square iron plate mounted between the dial and the front plate of the clock movement, made it possible to fit their dials to any tall clock movement, whether English or American. Birmingham mass-produced dials did not reach the American market in large numbers until after the Revolution. Baltimore clockmakers advertised these Birmingham products as "Dials in a great variety," and ". . . a large Supply of 12, 13, and 14 inch moon and solid arch Dials. . . ."<sup>19</sup> Clockmakers usually painted their own names on the dial, whether they had manufactured the movement or were simply retailing them.



Figure 5a. Hood.

It is difficult to determine just how cases and clock movements were brought together. Several Baltimore clockmakers advertised that they had clock cases in their shops, such as Joseph Townsend, who in 1792 offered "A few elegant 8-day clocks-with or without cases, as may best suit the purchaser."<sup>20</sup> Both movements and cases were major investments, and not every middle-class patron could afford to purchase both at the same time.<sup>21</sup> Older cases occasionally were replaced with more stylish ones, and out-of-fashion brass dials exchanged for more modish and less-expensive white dials. By the nineteenth century, then, the three elements of a tall clock—the movement, the dial, and case—all involved completely different skills and separate trades.<sup>22</sup>

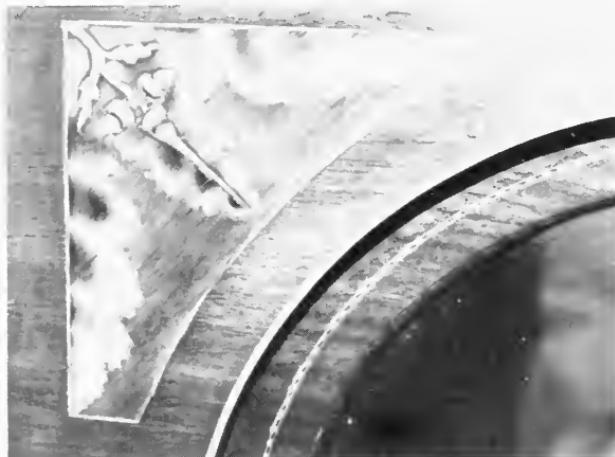


Figure 5b. Hood spandrel detail. Photograph by the author.



Figure 5c. Finial plinth detail. Photograph by the author.

The high survival rate of American tall clocks is one documentation of the fact that clocks were significant investments. Estate inventories of prominent Baltimoreans as well as the shop inventories of the city's more successful cabinetmakers provide indices of the expense of tall clocks in comparison with the values of other expensive furnishings such as beds and looking glasses. The 1800 estate inventory of cabinetmaker Gerrard Hopkins valued his "mahogany clock case complete" at \$60.00, but his fashionable set of Northumberland dining tables was appraised

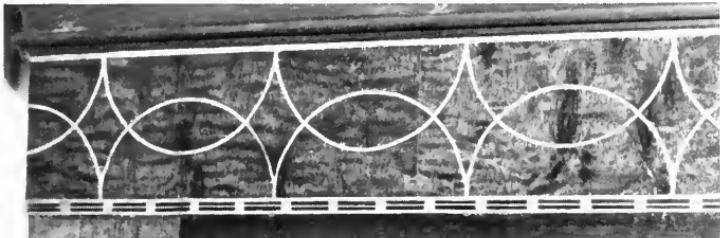


Figure 5d. Detail of waist. Photograph by the author.

at only \$44.00. Beds, with their attendant fabrics, were usually the most costly item in an eighteenth century house; the two "mahogany beds with furnishings" made by Baltimore cabinet-maker William Camp in 1818 for the White House must have been exceptional in view of their \$767 cost. Camp offered French beds with solid scrolled ends at a cost of £3.9.6 or \$20. A mahogany-veneered, flat-top clock case, without movement or inlay, probably could have been purchased from Camp's shop for \$30 before his 1822 death. A "sideboard and looking glass" were listed at the same value, \$30, in John Tolley Worthington's 1834 estate inventory. Low values in some estate appraisals suggest pieces that were both old and unfashionable; many such entries



Figure 5e. Detail of plinth. Photograph by the author.



Figure 6. Tall clock with eight-day movement, the seat board of the movement inscribed "[Peter] Mohler [illegible] 14, 1797/Baltimore," mahogany and mahogany veneer with poplar secondary. HOA 94 1/4, WOA 20 1/2, DOA 10 1/4. Courtesy the Maryland Historical Society, accession 8169, gift of Mrs. Lowell Ditzén.

do not reflect the quality of construction or degree of ornamentation. For example, two convex mirrors which were very stylish when they were made about 1802 were given the low appraisals of \$10 and \$20 in 1847, the year in which their owner, Solomon Etting, died. A pair of sofas were listed in John McKim's 1842 estate inventory at only \$20, in contrast to a tall clock by Hebb appraised for \$90 in 1796.<sup>23</sup>



Figure 6a. Detail of hood spandrel. Photograph by the author.

Since tall clocks occasionally were modified or upgraded with changes of cases or dials, it can be difficult to group an associated series of examples. With the clocks examined here, an attempt was made to establish a chronology by identification of dial manufacturers. After the Wilson-Osborne partnership was terminated in 1777, Wilson continued in the dial-making business until his death in 1809. Most of the dials which he exported to America are eighteenth-century examples, so dials and false plates stamped with his name tend to fall into the earlier period. This method of dating clock movements is inexact, since dials were purchased in bulk, and it is possible that any given dial was in a clockmaker's inventory for some time before attachment to a movement. Further, the possibility always exists that the dial is not original to the case. The design characteristics of these dials have been

charted here (Appendix I) to illustrate the variety that was available to the consumer.<sup>24</sup> The most obvious solution to the problem of dating the clocks is groupings based upon the signatures on the dials. All sixteen clocks, due to the extensive cross-referencing of details here, are noted in the text simply by a number which corresponds with the figure number for that particular example. Movements with the signatures of three prominent Baltimore clockmakers, Charles Tinges (working 1799-1816), William Elvins (working 1796-1816), and William Thompson (working 1799-1816), are repeatedly found in clockcases of this inlaid group.

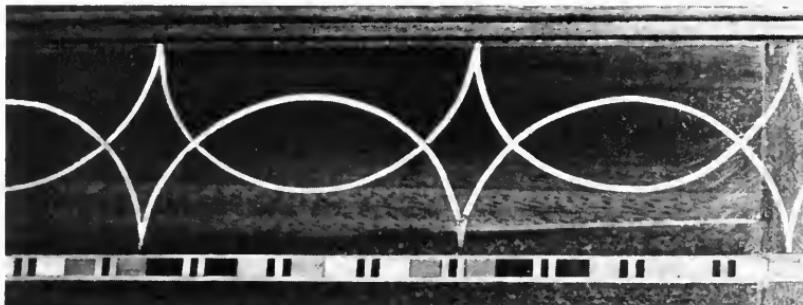


Figure 6b. Waist detail. Photograph by the author.

Tinges-signed dials occur on three known examples (nos. 11 and 12; the third example is not illustrated), Elvins on four (nos. 2, 3, 4, and 5), and Thompson-signed dials on six (nos. 7, 8, 9, and 10; the remaining two examples are not illustrated).<sup>25</sup> Despite this correlation of clockmakers, however, the cases themselves are far more diverse in regard to their makers. Even so, until fairly recently clocks with the grapevine inlay were commonly known as "Fells Point clocks" due to the presence of William Elvins' signature on the examples first publicized. Elvins worked at four different Fells Point addresses: Thames Street in 1796, 4 Fells Street in 1799, 10 Bond Street during 1800-1801, and 12 Fells Street to 1816. Due to Elvins' locations, it was assumed that the cabinetmaking shop responsible for these ornate cases also must have been located in Fells Point. Other examples signed by Tinges and Thompson, who worked on 62 Baltimore Street and 4 Market Place respectively, made the certainty of a Fells Point maker doubtful. These addresses were separated by only a few blocks; both were near Gilbert Biggers' 115 Baltimore Street shop and were also near Peter Mohler's Old Town address, 22 Harrison Street. It is more likely, therefore, that the clock cases and/or the inlay work in this group were produced in Baltimore proper.



Figure 7. Tall clock with eight-day movement signed by William Thompson of Baltimore (w. 1799-1816), mahogany with mahogany veneer, poplar, white pine, and mahogany (door core) secondary. HOA 95 3/4, WOA 22, DOA 10 3/4. MRF S-9207.



Figure 7a. Hood.

The initial search for a single cabinetmaking shop as a source for these clock cases proved to be futile. From a construction standpoint, it became evident that none of the sixteen cases contained clear technological evidence of production in one shop. With the exception of the four examples with the lobed-urn inlay in the spandrels of the hoods (nos. 2, 3, 11, and 15), no other aspects of the inlay work appear to be by the same hand, although similar vine designs were probably created in the same specialty shop.

Clues to the Baltimore shops which may have made these cases were found in two sources. One of these was a labeled clock case

(no. 16), which proved to relate in only the most general manner to the other fifteen clocks. However, William Patterson, whose name appears on the label, worked at 24 Albemarle Street in Old Town during 1796-1817 and did have connections with many other prominent cabinetmakers in the city. Patterson, among others, patronized Thomas Barrett, an inlay maker at 52 Harrison Street.<sup>26</sup> The second and more substantial source for the possible identification of the clock-case makers was found in the 20 November 1800 sale of "all [the] moveable estate" of Thomas Barrett, "consisting of mahogany Desks and Book Cases, Tables, Feather Beds: . . . likewise a quantity of ornamental inlaying-work for Cabinet-Makers."<sup>27</sup> The account of this estate sale lists the names of eleven prominent artisans who owed the estate money.<sup>28</sup> Enumerated in the inventory of Barrett's estate were 1288 "shells for inlaying furniture" and a set of tools appraised for \$50.<sup>29</sup> The names of seven local cabinetmakers who purchased 719 yards of banding and 540 shells were listed in the account of sales.<sup>30</sup> Among these purchasers was William Patterson. Plotting the locations of the shops of Patterson and the other cabinetmakers who purchased inlays at the Barrett sale may be useful, since as one study of the Baltimore furniture trade has indicated

. . . inter-craft relationships can be surmised through the examination and comparison of the commercial locations of individuals engaged in the furniture trade. Of course, this does not mean that simply because two craftsmen had shops near one another, that they necessarily carried on business with each other; however, that seems to have been the case.<sup>31</sup>

Patterson, who purchased 119 shells, advertised two days after the sale that "he has commenced the manufacturing of stringing, banding, and shells of every description," informing "Country Cabinet-Makers that he means to keep a general assortment of Inlaying, &c."<sup>32</sup> Patterson's mention of "shells of every description," coupled with the exceptionally large number of "shells for inlaying furniture" in Barrett's estate, strongly suggests that during this period the term "shell" may have been used in Baltimore to describe any sort of pictorial inlay.

Among the buyers at the Barrett sale, Patterson was the only tradesman located in Old Town; his shop was not far from Charles Tinges' dwelling at 9 Great York Street, which was an extension



*Figure 8. Tall clock with eight-day movement by William Thompson of Baltimore, mahogany with mahogany veneer, poplar secondary. HOA 98 1/4, WOA 22 1/2, DOA 11 1/2. Pediment and feet replaced. From Baltimore Furniture, 1760-1818, p. 144. Courtesy of the Baltimore Museum of Art. Private collection.*

of Market/Baltimore Street (see frontis illustration). Across the Griffith Bridge, which spanned the Jones Falls, was James Davidson's cabinet shop at 1-3 Baltimore Street. Davidson, a successful cabinetmaker until his death in 1806, bought only 67 yards of banding at the sale, along with a knife case with knives and forks. Just off Baltimore/Market Street was the Market Place, where clockmaker William Thompson occupied space number four. In space forty-seven was Walter Crook, who purchased 258 yards of banding at the sale. Of the shop owners who owed Barrett's estate, only Nathaniel Hynson worked in Fells Point; his address during 1799-1810 was 98 Bond Street.



Figure 8a. Detail of hood spandrel. Photograph by the author.

Thomas Barrett and William Patterson, then, are two tradesmen possibly responsible for the inlay used on this group of clocks. One 1806 advertisement reveals that inlay materials were also imported from Boston; they were sold by William Vance "at his plane manufactory, No. 7 North Charles Street, next to the Union Bank of Maryland." Vance noted that he had received inlays "from the manufactory of Duhurst and Son" in Boston and expected to be "regularly supplied" by the same firm "with a large and elegant assortment of Banding, Stringing, and other Ornaments, suitable for cabinet makers, which will be sold on

as reasonable terms as if purchased from the manufacturers.''<sup>33</sup> Vance, who was in business from 1799 to 1812, made tools for local cabinetmakers; his shop was located in the center of Baltimore. Existing furniture provides evidence that Boston-made banding, stringing, and "other Ornaments" were widely employed in the city.<sup>34</sup> During 1808-1810 the partnership of Thomas Coulson and George Dewhurst, located at the corner of Charles and Camden Streets, offered "fancy banding . . . made to any pattern, and which . . . they will constantly keep an assortment . . . they will warrant equal to any imported, and at reduced prices."<sup>35</sup> After the partnership was terminated, Dewhurst continued the manufacture of "Fancy" banding and stringing at 22 Fayette Street.<sup>36</sup>



Figure 8b. Detail of hood column. Photograph by the author.

By the end of the eighteenth century one of the causes of labor problems for the cabinetmaking trade was the increasing variety of decorative options from which a consumer might choose. The price books provided standards by which the time required to complete elements could be estimated. This was of particular importance in determining fair wages for popular but complex Neoclassical forms such as card tables and sideboards. The production of tall-clock cases, however, became standardized to such an extent in the London cabinetmaking trade that their costs

were omitted in the 1793 Cabinetmakers' London Book of Prices. The title page of this work observes that the book contains "above 200 various designs, intended as a guide toward prices; for which reason, they have not plates for the more common work, that being what almost anyone may settle without the assistance of a drawing."<sup>37</sup> By that time the construction of clock cases apparently was so well understood that "almost anyone" could produce such "common work."<sup>38</sup>

Unlike the earlier London reference, the 1796 editions of the New York and Philadelphia price books included the clock case. The listing in the Philadelphia book uses a straight-cornice, plain-cornered case as a baseline, adding numerous "extras" to that basic clock:

CLOCK CASE	
With square head and corners, all solid with straight brackets [feet]	[£]3.0.0
EXTRAS	
Arch'd head and scroll pediment	1.2.6
Fret and dentils	0.10.0
Column corners, in body part	0.7.6
Ditto in pedestal [plinth] part	0.4.6
Scolloping the top of door and rail	0.3.9
Swelling the brackets [ogee feet]	0.1.101/2
Running the scrolls with ogee and bead	0.2.6
Veneering the front of the door in the body	0.2.10 1/2
If with a feather [crotch figure]	0.3.6
Veneering the front of the pedestal	0.3.6
If with a feather,	0.3.0
Framing the pedestal part, and planting an astragal square	0.5.0
If with a hollow corner [on the plinth]	0.6.0
For the price of banding, stringing	See tables of ditto <sup>39</sup>

No price book was published in Baltimore during this period, but at least one copy of *The Cabinetmakers' London Book of Prices* was owned in Baltimore.<sup>40</sup> The prices listed in the London edition were identical to those of the 1796 Philadelphia book, although without the fifty-per cent adjustment for sterling currency. While the London book does not include a clock case,

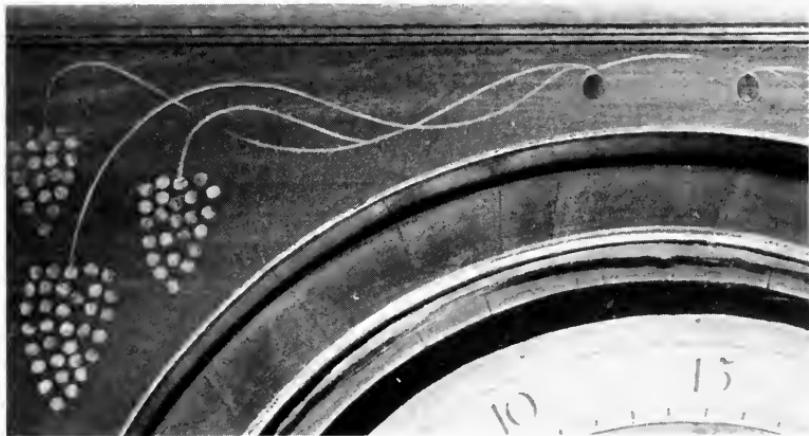


Figure 9. Hood detail from a tall clock with eight-day movement, the dial signed by William Thompson of Baltimore, the movement signed "Joseph P. Meredith/Baltimore 1806" on the great wheel of the going barrel. Meredith was an apprentice of Thompson. Mahogany and mahogany veneer with poplar, white pine, and yellow pine secondary. Dimensions not recorded. Pediment and crown molding replaced. Private collection, photograph by the author.

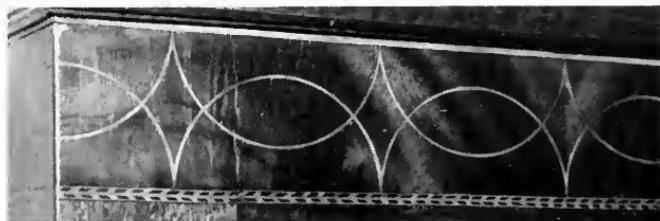


Figure 9a. Waist detail. Photograph by the author.

presumably English prices for clock-case elements were similar to those of Philadelphia. Details such as a "scroll pediment," however, were not fashionable in London during this period. Normally, inlay on tall clocks largely was composed of "straight work," with the exception of inlaid "fluting" on finials and the columns of the hood. Most inlay was priced by the inch or foot of stringing, banding, fluting, or other linear decoration. Table 10 of the Philadelphia book lists "The price of forming ovals or circles by strings," specifying that "treble strings, when the middle one is the eighth of an inch wide and above, [are] to be considered banding." "Inlaid flutes . . . in pilasters, etc.," "common flutes" and "counter-fluting," or stop-fluting, are described in Table 5 of the Philadelphia book and Table 18 of the London book.<sup>41</sup>

Charles Montgomery established a relationship between labor costs and retail pricing in late eighteenth and early nineteenth-century cabinet shops.<sup>42</sup> He suggested that the labor costs reflected the number of days it took to make the piece; if a table cost \$2.50, two and one-half days had been required to make it. Retail cost was marked up approximately three and one-half times the labor cost. Since clockmaker's account books are scarce, values of tall clocks are seldom found elsewhere than probate inventories. A rare record of the cost of unsold merchandise were the "2 clocks and 2 cases" listed for \$100.00 in the probate inventory of Charles Tinges' shop, taken 10 June 1817.<sup>43</sup> A \$50-\$60 price range for clocks seems reasonable; noted earlier was a \$60.00 clock and case listed in the 1800 estate inventory of Gerrard Hopkins.<sup>44</sup>

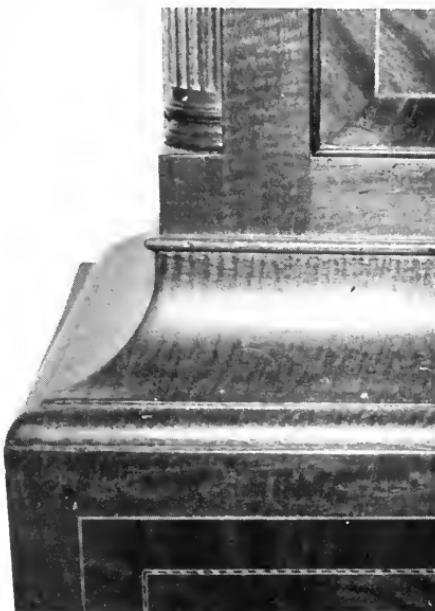


Figure 9b. *Waist and plinth detail.* Photograph by the author.

Regarding the group of clocks illustrated here, it has been suggested that since no expense was spared in hood inlay and in the finish of doors and plinths, all of the clocks originally must have had scrolled pediments with intricate scrolled tracery.<sup>45</sup> However, it is believed that only four examples retain both original pediment moldings and tracery; there is varied evidence of pediment alterations. Remnants of tracery are evident on one example (no. 16), the presence of a plinth may be seen on another

(no. 5), and several examples reveal modern reconstruction of missing elements. However, the clocks shown here which have no pediments do not retain evidence of any structure above the cornices.<sup>46</sup> Regardless of the presence of either pediment or straight cornice, most of these cases are unusually tall; the shortest (no. 12) is 87 1/2" in height and the tallest (no. 13) is 102 1/2". Cornice widths vary from 19 1/2 to 22 1/2", and cornice depths range from 9 1/2 to 11 1/2".

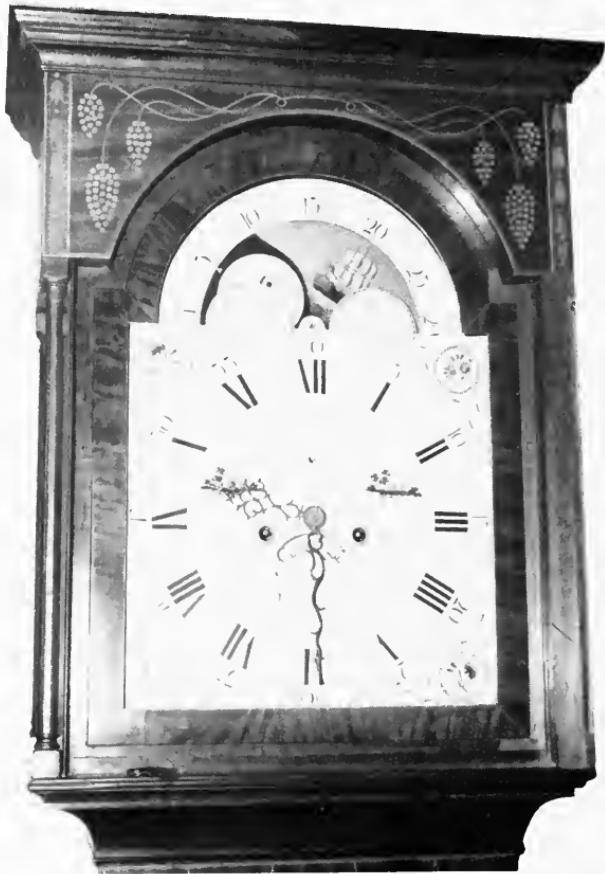


Figure 10. Hood of a tall clock with eight-day movement signed by William Thompson of Baltimore, mahogany and mahogany veneer with poplar and white pine secondary. HOA 92 1/2, WOA 21 1/4, DOA 10 1/2. The bellflowers are modern additions. Private collection, photograph by the author.

Glue blocks surviving in these cases vary in section, occurring as quarter-rounds, three-sided chamfered blocks, and rectangles. A series set close together is usually fitted in the front corners

of the waist. There may be as few as ten or as many as sixteen on each side; since they are not of uniform length, the number varies on each side of the case and from case to case. Smaller glue blocks which do not necessarily conform to the shape of those in the waist are fitted in the front corners of the hoods. The use of lavish multiple glue blocking is an English trait and typical of the mid-Atlantic region, where so many English-trained craftsmen settled. The case-back construction of this group is uniform; the case sides are usually solid, run at the rear with a rabbet to receive the back board, which is nailed in place.

All sixteen clocks have the same combination of primary woods: mahogany, mahogany veneers, light and dark wood inlays. Only three have additional varieties of woods used for fancy



Figure 10a. Detail of hood. Photograph by the author.

veneers. The secondary woods are typical for the region and period: poplar, yellow pine and white pine; most of the latter was imported from northern states. Some variations occur, such as the walnut door core on number 5 and the mahogany core in the door of number 7. For the most part, backboards are poplar; other variations in secondary woods are not out of the ordinary for Neoclassical furniture in Baltimore.

During this period, the trades of cabinetmaker and inlay maker embraced different skills and were completely separate. The word "ebonist," which some Baltimore inlay makers used to describe themselves, is an anglicized version of the seventeenth-

century French word *ébéniste*, or a cabinetmaker who veneered furniture with ebony. That dark and exotic wood had become fashionable on French court furniture in the seventeenth century. The tradition of making a distinction between the tradesman who fabricated the core of a piece and the artisan who embellished it is also French. The *menuisier*, or joiner, constructed carcasses and chair frames, and the *ébéniste* veneered them. This hierarchy of specialization in the cabinet trades persisted in France from 1745 to the time of the Revolution.<sup>47</sup>



Figure 10b. Side of hood. Photograph by the author.

The use of the term “ebonist” in Baltimore is not known to have been shared by other southern cabinetmaking centers. The few tradesmen who advertised inlay materials usually listed themselves as “cabinetmakers” rather than “inlaymakers.” Two

exceptions were Thomas Barrett and Francis B. Garrish of Baltimore. Garrish's shop was listed at 82 High Street in the 1810, 1814, and 1816 city directories; the proprietor repeatedly called himself an "ebonist." Both Garrish and Barrett were also cabinet-makers; in a 1795 indenture, the latter took John Lennox, who was "one-half of the apprenticeship to be employed at the inlaying business, the other part cabinetmaker."<sup>48</sup> After Barrett's death, Garrish, who is believed to have purchased Barrett's tools at the estate sale,<sup>49</sup> took the deceased artisan's son John as an apprentice on 12 December 1800 in "the trade of eboniste and cabinet-maker."<sup>50</sup> In 1803, however, the younger Barrett's apprenticeship was shifted in the shop of John Coleman, where his training was solely that of a cabinetmaker. What the use of the term "ebonist" and "eboniste" in Baltimore may imply in regard to the structure of the cabinetmaking trade there deserves further research, but it is likely that the use of the French term was no more than a matter of semantics.

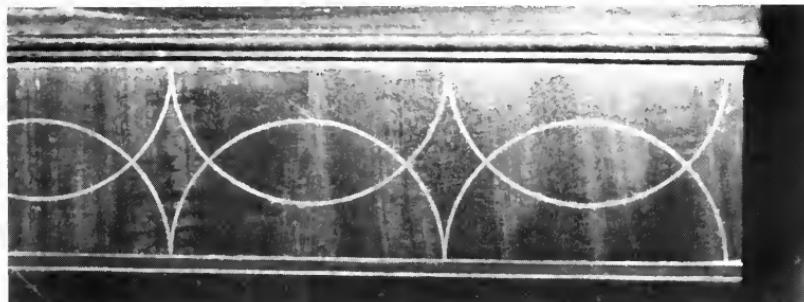


Figure 10c. Detail of waist. Photograph by the author.

Three types of inlays were advertised by specialists: stringing, banding, and "shells." Stringing and patterned banding were used to create the geometric shapes popular during the Neoclassical period. Plain stringing, comprised of a single strip of wood, could be inlaid in single, double, or triple strings and did not require specialized skills. Not covered in the tables of the price books was stringing set in a fret motif; a type of inlaid fret common in Baltimore was formed by interlacing compass-scribed arcs. This provided the appearance of a series of alternating pointed ovals and diamonds. This interlaced-arc fret is occasionally seen on the frieze below the cornice of the hood (nos. 1, 6, and 8), but more often on the upper waist (nos. 2 through 7, 9 through 12, 14, and 15). As it occurs in this position, the fret is the most common type of inlay seen in this group of tall

clocks. The same fret frequently is found on the frieze below the cornice of desk-and-bookcases as well as other Baltimore case pieces. This detail also has been observed on Kentucky furniture, probably carried there by an emigrant Baltimore cabinetmaker.<sup>51</sup> On the Baltimore clocks, the fret inlay is bordered by geometric stringing of varying complexity; the frets on clock numbers 2 and 15 are alike except for the borders.

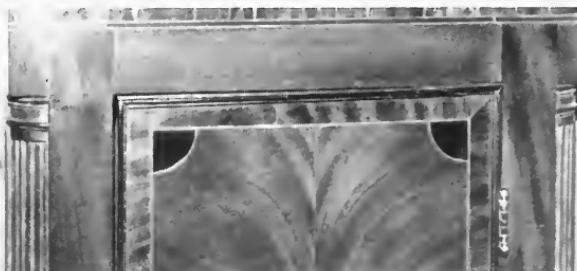


Figure 10d. Waist. Photograph by the author.

Pattern stringing, or "fancy banding, made to any pattern," consisted of bundled strips of contrasting woods, often dyed or scorched, which were glued together, sawn off in small sections, and pieced into strips of repeating geometric arrangements. Such inlay was more expensive than the simple borders of stringing listed in the price books. These patterned bands were made in endless varieties, so the occurrence of an identical pattern of intricate banding on several pieces of furniture suggests manufacture in one shop. In *American Furniture: the Federal Period* Montgomery illustrates 84 examples of such work, ten attributed to Pennsylvania and Maryland.<sup>52</sup> 100 patterns of banding are shown in Hewitt, Ward, and Kane's *The Work of Many Hands* as details found on 374 card tables, but these inlays are not regionally grouped. The study reveals that "in all the centers, except Baltimore, cabinetmakers used more patterned inlays that were shared by two or more centers than were unique to their center." Of the 43 Baltimore card tables illustrated, 29 different patterned inlays were recorded, and 16 of these were found to be unique to the city.<sup>53</sup> The number of inlay patterns specifically attributable to Baltimore documents the extent of the demand for intricate work in the city.

Clock numbers 1 and 14 have no patterned inlays at all; clock number 15 with five different types, has the greatest variety. The most frequently-used banding is composed of a series of

diagonally-cut alternating light and dark pieces (Fig. 9b); it is used to outline edges on clock numbers 2, 4, 5, 7, 9, 11, and 12. This inlay is illustrated in Montgomery (no. 76) and Hewitt (nos. 51, 57). Both clock numbers 2 and 15 use inlay illustrated in Montgomery (35) as borders to the waist fret (Fig. 15b). Clock number 4 uses a dentil-like inlay (Fig. 4b) over the tympanum arch (Montgomery no. 12, Hewitt no. 1); a similar version (Hewitt no. 2) with double stringing on the bottom is used on the cornice



Figure 10e. Plinth. Photograph by the author.

of number 15. A better inlaid approximation of a dentil molding (Fig. 16; Hewitt no. 5) is evident on clock number 16. The "block-and-line" arrangement (Fig. 5d) below the waist frieze of clock number 5 is described by Montgomery as "almost a signature for Baltimore workmanship."<sup>54</sup> Several different banding patterns

used in this group do not precisely match any of those recorded in either Montgomery or Hewitt; they occur on the plinth of clock number 15 (Fig. 15c),<sup>55</sup> as a border for the fret (Fig. 7a) on clock number 7,<sup>56</sup> and as two variations of intricately-colored bands of inlay (Fig. 6a, 6b) on number 6. The uniqueness of these suggest local manufacture.

Of the inlay used to decorate the cases of this group of clocks, it is the pictorial work that provides the clearest evidence of ornament unique to Baltimore. Pictorial inlays were prevalent in Newport and New York<sup>57</sup> as well as Charleston and Baltimore. The degree to which such inlays were either imported to Baltimore or made there is difficult to ascertain. An advertisement in the 19 October 1793 *Baltimore Daily Repository* reported that Robert Courtenay had “just received from London, per the ship *Republican*, a large assortment of Dressing and Pier Looking-Glasses, of all sizes . . . Also Tea Caddies; Knife Cases; Gilt Picture frames; and shells for inlaying mahogany furniture; all of which for sale at moderate terms.” Courtenay was an importer, not an inlay manufacturer.

The precise structure of the inlay trade in Baltimore remains uncertain; no evidence has been found that proves the economic soundness of operating an establishment dedicated to inlay production. The account of Thomas Barrett’s estate sale indicates the cost range of the fourteen lots of “shells for inlaying furniture.” A lot of 43 shells was bought by Anthony Law for 6 cents each, and 9 shells went for \$1.10 apiece.<sup>58</sup> These shells no doubt varied in size, the number of woods of which they were composed, and the extent of dying and scorched shading, whereby the edges were darkened in hot sand. Another cost factor was the complexity of the inlaid scene itself. Less than half of the 1288 shells in Barrett’s inventory were sold at the auction; of that impressive number, it is impossible to know how many had been imported, and from where.

Barrett most likely enlarged his operation by distributing imported inlays along with his own work. He was in business for at least five years, 1795-1800, and judging from his inventory at the time of his death, he must have had a successful enterprise. The extent of the market for pictorial inlays in Baltimore is documented not by the number of specialists producing them there, but by the quantity of surviving pieces with Neoclassical decorative motifs. As we have seen, artisans other than Barrett who advertised that they made inlay included Francis B. Garrish



Figure 11. Tall clock with eight-day movement signed by Charles Tinges (w. 1797-1816) of Baltimore, mahogany and mahogany veneer with poplar and white pine secondary. HOA 100, WOA 20 3/4, DOA 10 1/2. Courtesy of the Maryland Historical Society, accession 40.22.5, gift of Ethel M. Miller. MRF S-10056.

and George Dewhurst. Garrish was a piano-forte maker by 1817, after the period when pictorial inlay was fashionable. Nevertheless, he had produced inlays for fifteen years. It is not known how long George Dewhurst remained in business after he left Thomas Coulson in 1810.<sup>59</sup>



Figure 11a. Hood.

Three factors make it difficult to differentiate between British or European inlay and that made in urban America. First, microscopic wood analysis of these intricately-assembled “puzzles” is destructive to the inlay. While the greenish surround of a shell inlay might be assumed to be American tulip poplar,

for example, it is equally possible that the material is some other light-colored wood that has been dyed green. Further, by the nineteenth century a large vocabulary of Neoclassical motifs had become almost universal. Trophies, urns with or without leaves, Prince of Wales feathers, conch shells, and bellflowers, among other inlaid motifs, were widely circulated via English pattern books. In Baltimore, George Hepplewhite's 1788 *Cabinet-Maker*



Figure 11b. Dial.

and Upholsterer's Guide provided extensive design sources for Neoclassical surface decoration; Thomas Sheraton's *Cabinet-maker's and Upholsterer's Drawing Book*, published in 1791 and reissued in 1793 and 1803 had a particularly strong influence upon the form of Baltimore furniture, especially after 1800. The final

factor in separating domestic from imported pictorial inlays is the actual use of the inlay, and in this we may actually find clues regarding origin. The size and shape of inlays were often determined by the space they were intended to fill. If, as it has been assumed, inlay was mass-produced and exported, and if sizable lots of identically-priced inlays like those sold at Barrett's auction were all the same form and intended for specific locations on furniture,<sup>60</sup> then the actual frequency of use appears to imply local production.<sup>61</sup> The infrequent occurrence of a particular inlay suggests outside manufacture, although whether "outside" signified Boston or Britain is difficult to determine. With such obstacles in mind, the author's study of pictorial inlays on Baltimore furniture embraces the premise that these inlays indeed were mass-produced and could have been purchased locally. Because the sample studied is small, the question of whether or not all of the inlays were produced in Baltimore remains a matter of conjecture.



Figure 11c. Finial plinth. Photograph by the author.

Appendix III illustrates the distribution of these inlays, which are the salient characteristics that bind the majority of these tall clocks into a related group. Each clock employs a different combination of inlay designs. Pictorial inlays ornament the cases of clock numbers 1, 2, 3, 5, 6, 7, 8, 11, 12, 15, and 16. The others exhibit unusual motifs that suggest the work of one particular artisan. These details are the bowknot (Fig. 2a; nos. 2, 3); the "leaves" of the scrolled pediment rosettes (Fig. 1d; nos. 1, 2, 7, 13); the inlay on the finial plinth (Fig. 1d; nos. 1, 2, 5, 11); pictorial inlay in the spandrel area of the hood (nos. 5, 8); the

bellflowers in the side panels of the hood (Fig. 3b; nos. 2, 3, 6, 7, 10, 11, 13); and the conch shell on the base or plinth of clock number 16.

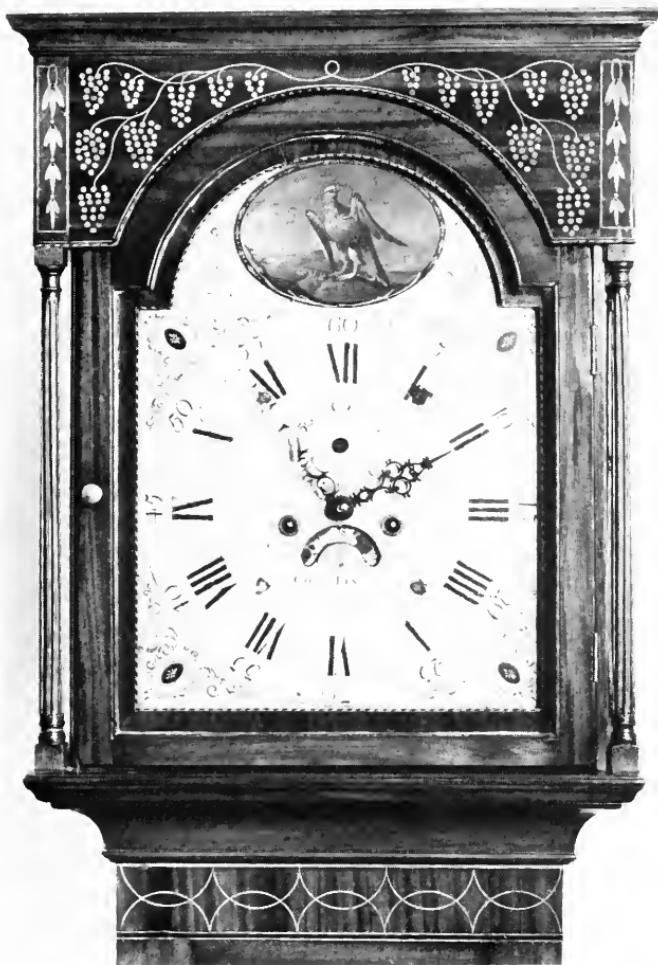


Figure 12. Hood of a tall clock with an eight-day movement signed by Charles Tinges of Baltimore, mahogany with mahogany veneer and poplar secondary. HOA 90, WOA 19 1/2, DOA 10. Photograph courtesy of Bernard and S. Dean Levy, Inc.

The London-trained craftsmen that emigrated to Baltimore during the eighteenth century naturally brought with them an affinity for fashionable English styles. Patricia E. Kane, in *The Work of Many Hands*, suggested that the appeal of Hepplewhite's *Guide* lay in its conservative tradition, much in the same spirit

as the “earlier eighteenth century design books of Thomas Chippendale’s *The Gentlemen and Cabinetmaker’s Director*, (1754, 1755, 1762), William Ince and John Mayhew’s *The Universal System of Household Furniture* (1759-1762), and Robert Manwaring’s *The Cabinet and Chair Maker’s Real Friend and Companion* (1765), all of which reported on the latest London fashions.”<sup>62</sup> Considering the long established design tradition of the cases of tall clocks, it seems reasonable that Baltimore inlay specialists, in their desire to follow fashionable London Neoclassical styles, would adapt the more conservative Hepplewhite designs. The bowknot was a popular Neoclassical element used in architecture as well as in furniture carving and inlay.<sup>63</sup> Plate 61 of Hepplewhite’s Guide illustrates a bow used as part of the decoration for card table tops, and Plate 78, “Tops for Dressing Tables” provides four additional examples. Other Hepplewhite designs for bowknots occur in Plates 14, 24, 98, and 115. British trade catalogues for composition ornaments illustrate several adaptations of the bowknot in many sizes for mantels, door casings, or pilasters and other architectural elements. In the two tall clocks shown here, the bowknot (Fig. 2a, 3b) is incorporated with inlaid vines.<sup>64</sup>

Another Neoclassical motif, the bellflower, was known as a “husk” in 18th century English ornamental vocabulary. Renaissance examples of the husk may be found in Raphael’s c. 1510 Loggia of the Vatican; these relate closely in style to details of wall frescoes in Pompeii. They are illustrated throughout the eighteenth century in British architectural design books. The simplified versions of the husk inlaid on Baltimore furniture are “formed of the leaf like segments of a calyx (outer leaves at the stem of a flower), rather than the petals of a corolla.”<sup>65</sup> The Baltimore adaptation of the bellflower is distinctive (nos. 2, 3, 6, 7, 10, 12, 13), serving as a stylistic signature of the city’s Neoclassical furniture. Baltimore bellflowers (Fig. 6a) are composed of three separate leaves, the edges of which are shaded; the central leaf is invariably longer than the other two. The flowers are consistently separated by a dot; these husks hang from an oblong loop (Fig. 6a; nos. 6, 7, 12) or an inlaid “nail” (Fig. 3b; nos. 2, 3). Three husks are used on the side panels of the clock hoods if they are accompanied by a small lobed urn; four are used in the absence of an urn. The unusual tattered husks on the hood of clock number 13 are a type found on a small group of Baltimore furniture.<sup>66</sup> The four bellflowers (Fig. 4b) used on clock number

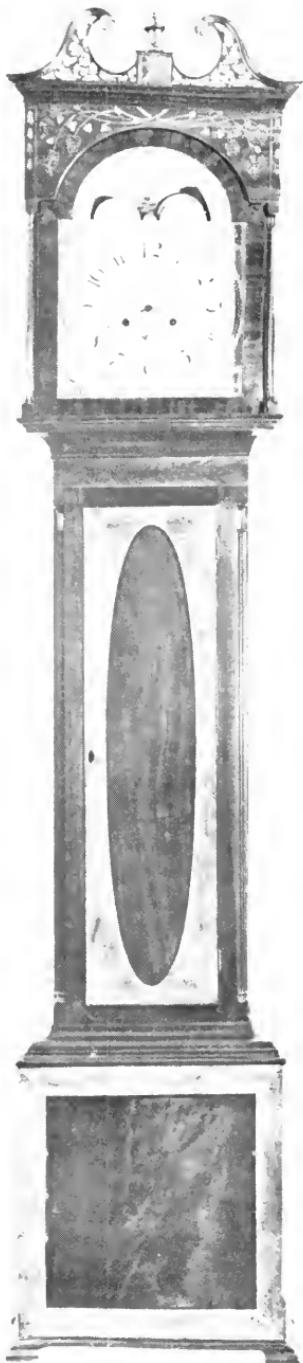


Figure 13. Tall clock with unsigned eight-day movement, Baltimore, mahogany with mahogany and satinwood (?) veneer, secondary woods not recorded, HOA 102 1/2, WOA 20, DOA 10. From Opportunities in American Antiques (New York: Israel Sack, Inc., 1976), p. 67. Courtesy of Israel Sack, Inc.

4 do not resemble any husks commonly associated with Baltimore; however, they exhibit the same naiveté as the grapevine which they accompany, and may represent the work of a less skilled inlayer. Bellflowers that show a classic Baltimore style occur in such quantity and regularity on furniture associated with the city that there is little doubt that they were manufactured by local specialists for the Baltimore cabinetmaking trade.



Figure 13a. Pediment. Courtesy of Israel Sack, Inc.

The inlaid rosettes (Fig. 1d) of the scrolled pediments on clock numbers 1, 2, 7, and 13 imitate the acanthus leafage carved on the rosettes of Rococo clocks.<sup>67</sup> They are composed of five leaves that fold over each other rather like a pinwheel; this is particularly evident on clock number 13. The center of the rosette of clock number 1 has greater detail than the others; it is filled with a tiny five-part "flower" of contrasting light wood rather than just the dots of dark wood in the center of the other flowers. The

pediment rosettes of other contemporary Maryland case pieces tend to be composed of radiating elements or "stars" of light and dark wood with a varying number of points.<sup>68</sup> Similar geometric designs are found on New England case pieces, but not the naturalistic flowers, which appear to be Baltimore work.

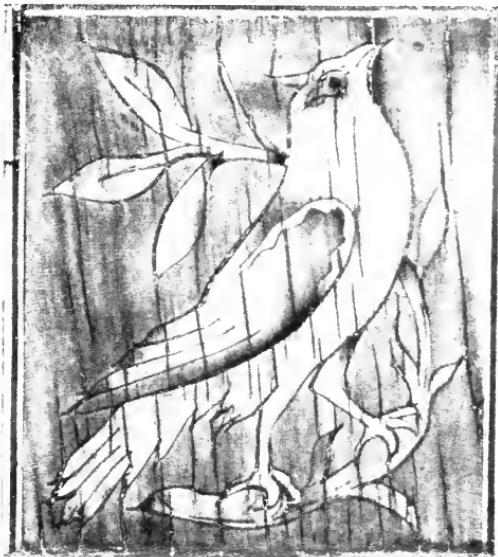


Figure 13b. Detail of finial plinth. Courtesy of Israel Sack, Inc.

The inlays (Fig. 11c) on the finial plinths of clock numbers 2, 5, and 11 are quite similar. Variations in the form of the vases are evident, and the number of flowers that protrude at the top varies, but the majority have four large leaves; the bottom pair trails down and the top two leaves are upright.<sup>69</sup> Of the three examples, those on clocks 2 and 11 are almost identical; number 5 varies not only in the form of the entire inlay, but also in the shapes of the leaves and flowers as well as their arrangement. The manner in which the base of the urn connects to the stem of the lobed body also differs. Clock numbers 2 and 11 are among several in the group that also have lobed urns (Fig. 2a) in the hood side panels; all of these urns have flat pedestal bases. The hood inlay on clocks 2 and 11 may represent the work of one shop, perhaps in imitation of an imported prototype. Indeed, the frequency with which this same type of inlay occurs on imported British goods such as tea caddies and knife boxes implies that the design source may be English.

Three additional pictorial inlays, the acorns with oak leaves (Fig. 5a), a phoenix (Fig. 8a), and a conch shell (Fig. 16d), are likely the work of a Baltimore shop. Hewitt suggested reasons why such inlays may represent local work:

The production of integrated inlay [i.e. pictorial inlay fitted within a shaped ground; see Fig. 16d] for export was limited by a number of factors. Unlike patterned inlay, which by its nature was adaptable for use in many places on many different types of furniture, pictorial inlay was bound by its shape and size for use on a limited range of places or specific pieces of furniture. The varied regional preferences for the amount of pictorial inlay used, for the place where it was employed on tables, and for its details and motifs also argue against a ready market for pictorial inlay outside a local area. Because most pictorial inlays are closely bound to local markets, they are a reliable indicator for establishing the regional origins of card tables.<sup>70</sup>

None of the three inlays are composed of designs that can be considered uniquely American, although the phoenix and conch shell were used on Baltimore furniture more frequently than that of other American cities. All three designs have strong English precedents. The phoenix was a favored Rococo motif repeatedly published in London design sources.<sup>71</sup> The acorn with three oak leaves was a popular ornamental motif for interior architecture.<sup>72</sup> The shape of both of the pictorial inlays on clock number 5 were determined by the spaces to be filled, the trapezoidal finial plinth (Fig. 5c) and the triangular hood spandrels (Fig. 5b). Such specialized shapes, as Hewitt suggests, would have been an obstacle to marketing inlay intended for export. The phoenix (Fig. 8a) was also limited in regard to the shape of the space available due to the diagonal pitch of its tail, claws, and right wing. The hood spandrels of a clock or the surround of the bottom center cabinets of some sideboards were ideally suited to the use of this dramatic bird. Six Baltimore tall clocks (nos. 1 and 8), have a pair of inlaid birds resting upon the arch of the tympanum; four of the clocks with birds are not in our study group. One sideboard utilizes similar birds.<sup>73</sup> The phoenixes on the clocks are not set within borders. They appear to be uniform in size, and do not always fill the space successfully, suggesting that they were not custom-made for each clock case. Their relationship to the spandrel



Figure 14. Hood detail from a tall clock with unsigned movement, Baltimore, mahogany and mahogany veneer with poplar and yellow pine secondary. HOA 87 1/2, WOA 20 1/2, DOA 10. Private collection, photograph by the author.



Figure 15. Hood detail from a tall clock with an unsigned movement with a brass dial, Baltimore, mahogany and mahogany veneer with poplar and mahogany secondary. HOA 87 1/4, WOA not recorded, DOA 10 1/4. Pediment missing, upper element of cornice replaced, bed molding and feet replaced. Private collection, photograph by the author.

area is tighter when stringing is used to delineate a smaller space. With the exception of the "Baltimore bellflower," phoenixes represent the largest series of pictorial inlays associated with the Baltimore area.



Figure 15a. Detail of hood spandrel. Photograph by the author.

The elongated conch shell inlay with an oval surround (Fig. 16d) is listed by Hewitt as an unreliable indicator of regional origin; this inlay was common to English cabinetmaking.<sup>74</sup> The conch shells inlaid on American furniture are usually similar to the elaborately-shaded examples typical of Baltimore furniture.<sup>75</sup> These shells are fairly large, and tend to occur on the fallboards of desks, the veneered doors of sideboards or secretaries-with-bookcases, and they were also used on the tops of card tables where a large inlay was appropriate.<sup>76</sup> Smaller conch shells, so numerous on English card tables, tea caddies and other boxes, would have been the proper size for use in smaller spaces such as a prospect door of a desk-and-book-case. They are occasionally found on the upper leg stiles of card tables, although rarely in America.<sup>77</sup>

Four of the sixteen tall clocks, numbers 2, 3, 11, and 15 as well as the Hebb family clock which was unavailable for examination, are related by a small inlaid urn (Fig. 3b) at the bottom of the side panels of the hood spandrel area. The urn has three heavy lobes remarkably similar to the repoussé bodies of some

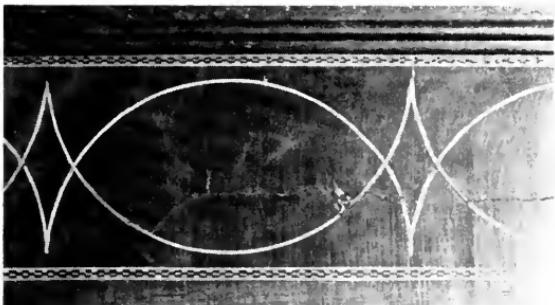


Figure 15b. Detail of waist. Photograph by author.



Figure 15c. Detail of waist and plinth. Photograph by author.

Neoclassical silver.<sup>78</sup> All of these urns are constructed from nine pieces of light wood, which have been shaded to provide depth to the lobes. Each urn sits on a square piece of darker wood within panels delineated by diagonal stringing on numbers 2 and 11; a fancier pattern of border is used on numbers 3 and 15. The consistency of the panels of stringing and the size and occurrence of the urns suggest that the inlay on these four cases is a product of the same Baltimore shop.<sup>79</sup>

The grapevine inlay on eleven examples (nos. 2, 3, 4, 6, 9, 10, 11, 12, 13, 14, and 15) is by far the most distinctive characteristic of this group of Baltimore clocks, which are familiarly called "grapevine clocks." Noted earlier was the popular association of these clocks with William Elvins and Charles Tinges. Further, it has been assumed that the grapevine design was "derived from the same local source,"<sup>80</sup> yet no local source has been found. None of the workmanship of the inlays, including that on the four from the urn-panel group, is identical. Even the two spandrels of each clock differ from one side to the other on all examples, particularly clock number 6. The most consistent work may be found on clock numbers 11 and 15, but each grape of the two clusters in the side panels is not inset in the same fashion on both sides. These complex inlays could not be executed quickly. One might think, however, that the skilled inlayer who produced the naturalistic vines on clock numbers 2, 3, and 13 might have utilized patterns that would have allowed him to repeat the motif precisely. Since no two grapevines are the same in nature, however, it is possible that the work was varied on purpose.



*Figure 16. Cornice detail from a tall clock with an eight-day movement signed by Mountjoy and Welsh, Baltimore, the case labelled by Baltimore cabinet-maker William Patterson, mahogany and mahogany veneer with poplar and yellow pine secondary. HOA 90, WOA 21 1/8, DOA 9 1/2. Pediment and rear feet replaced. Private collection, photograph by the author.*

In antiquity, the grapevine motif can be traced to the use of the likeness of Dionysus (Bacchus) on Grecian urns.<sup>81</sup> After the fourth century A.D., the celebration of the eucharist was

symbolized by the grape, from which the wine, or blood of Christ, was made.<sup>82</sup> By the medieval period the meandering grapevine was a subject of naturalistic illuminated manuscripts.<sup>83</sup> Eighteenth-century architectural books incorporated the grapevine into every aspect of Neoclassical embellishment. William Paine's 1791 *Practical House Carpenter*, in Plate 28 of Vol. II, displays "vine leaves and grapes dropt from a vine for the face of a pilaster or any place required." Although the grapevine does not seem to have been a popular decoration on British furniture, carved furniture attributed to the shop of Samuel McIntire in Salem, Massachusetts, displays lavish use of the grapevine to fill vertical spaces such as tapered sofa and table legs.<sup>84</sup>



Figure 16a. Detail of hood glue blocking. Photograph by the author.

In Baltimore, painted "fancy" furniture attributed to Hugh and John Finlay (working 1803-1816) make extensive use of grapevines on table edges and trailing down turned legs. An eglomisé frieze containing a gold-leaf grapevine is found on one of the most exquisite examples of Baltimore Neoclassical furniture, a lady's dressing table-with-cabinet (accession 38.7.8) in the collection of the Maryland Historical Society.<sup>85</sup>

On the inlaid furniture, the dozens of elements comprising the vines and grapes required individual cutting. It is apparent that the artisans who did the work possessed varying degrees of skill. Clocks 2 and 3 used the bowknot inlay, which was more effective than the loops of stringing used on nos. 4, 9, 12, and 14. All of the examples with three overlapping vines have the same arrangement: the bottom vine springs from the center of the bow, terminating in a cluster of grapes in the upper corner



*Figure 16b. Detail of waist door. Photograph by the author.*

of the spandrel. The middle vine suspends the largest bunch of grapes in the lower corners, and the top vine crosses the other two. Only clock number 12 has but two vines, but it displays eight clusters of fruit on each side, five more than usual. Triangular leaves are a consistent feature of the most naturalistic spandrels, numbers 2, 3, 11, 13, and 15, but some leaves are cut with more-detailed veining than others. The most incongruent blend of cabinetwork and inlay skills may be found on clock number 6. This example utilizes the most intricate patterned banding and the case has almost every conceivable embellishment, but the quality of the grapevine inlay is not the most sophisticated of the urn-panel group.

Given the adaptability of the grapevine design, it is curious that it was not employed in other urban areas such as New York, where pictorial inlay frequently was used, particularly on tall clocks. In the Boston/Salem area<sup>86</sup> this motif was always carved, and even the inlay work found on the work of the Seymours does not include inlaid grapevines. Baltimore, on the other hand, utilized the grapevine only as a one-dimensional embellishment. Although inlaid grapevines became synonymous with fashionable tall clocks in Baltimore, the quality in some instances exceeded that of the inlay, as we see in clock numbers 4, 6, 12, and 14.

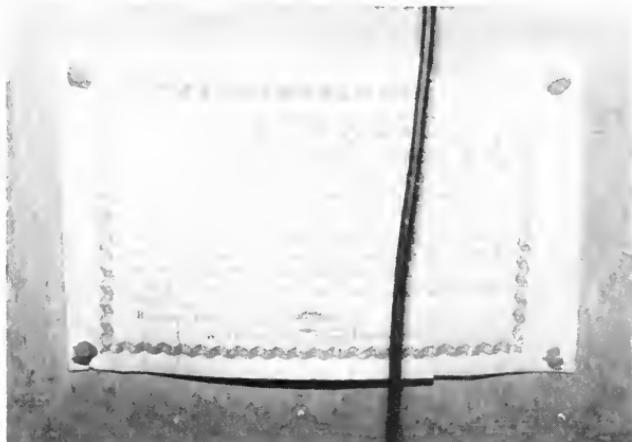


Figure 16c. Label inside waist. Photograph by the author.

Despite the large production of pictorial inlays, the tradesmen who produced them managed a significant degree of creative variation. Five of the clocks illustrate a combination of innovative pictorial inlays with standard elements such as husks that were considered normal options for these clocks. Clock number 1 combines an inlaid fret in the frieze below the hood with spandrels paneled by a single-line string; although this space is normally occupied by a phoenix, in this instance the spandrels are graced with doves (Fig. 1d) with olive branches in their beaks. Clocks 2 and 4 add realistic details such as sprigs of flowers (Fig. 2a) and sunbursts (Fig. 4e) to the quarter-fans of the waist doors; these fans are ordinarily filled with geometrical designs, or even filled with a monochromatic material such as ebony.<sup>87</sup> The oriole inlay (Fig. 13b) on the finial plinth of clock number 13 is believed to be unique, but reveals the same degree of sophistication as the grapevine inlay on the spandrels of the same clock. The inlay

(Fig. 16b) on the waist door of clock number 16 is one interpretation among a group of similar Baltimore inlays that are comprised of dark ovals surrounded with light stringing, and containing a shaded flower, occasionally in a pot.<sup>88</sup> These five unique inlays reveal a certain surge of creativity in an urban trade characterized less by custom-made ornament than by standardized choices.



Figure 16d. Plinth inlay. Photograph by the author.

Baltimore was a beneficiary of the post-Revolutionary prosperity which brought mid-Atlantic port towns to the economic forefront. The scant production of furniture in Baltimore during the colonial period contrasted with the full-fledged development of an indigenous Neoclassical style, produced in response to the growing wealth of a population that more than doubled between 1800 and 1810. The tall clock, historically an expensive purchase afforded only by the gentry, was affected by the consumer revolution of this period.

The rapid increase in tall clock production in Baltimore illustrates changes in technology that simultaneously were taking place in all major urban centers, where a new middle class had achieved

the means to own luxury goods. No longer strictly a custom-made order, the tall clock bridged the transition from bespoke work to ware-room items by retaining its conservative case style. Clock production acquiesed to cost-efficient standardized labor practices, mass-produced surface decoration, and imported dials and movements sold by clockmakers/retailers in large quantities and great variety. This readily-available assortment of stock goods provided consumers with more choices than had been possible previously. Individuality weakened as middle-men and furniture "shippers" sought to increase profits. The clocks we have examined here are a fascinating blend of standardized technology and specialized trade traditions, an amalgamation of the old and the new, in an age where consumerism and full-fledged industrialization were only beginning to take command.

*Ms. Smith, a former Field Researcher for MESDA, contributed the essay "Clock and Watchmaking in Maryland" for the catalog of the 1983 exhibition Silver in Maryland, and was guest curator of the 1985 exhibition Georgia's Legacy: History Charted Through the Arts. She is curator of prints and photographs at the Valentine Museum, Richmond, Va.*

## Appendix I

### Design Characteristics of White-Painted Clock Dials

EXAMPLES OF BALTIMORE TALL CLOCKS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

#### Dials:

- A. Brass
- B. White-painted
  - 1. False plate marked
    - a. Wilson
    - b. Osborne
    - c. unknown
    - d. other
  - 2. Spandrel design
    - a. floral
    - b. geometric fans, etc.
    - c. gold scrollwork
    - d. figures
  - 3. Arch
    - a. bird/flowers on white
    - b. vignette inset on white
    - c. moon dial
    - d. day-of-the-month dial
  - 4. Numbering
    - a. Hours
      - (1) Roman
      - (2) Arabic
    - b. Minutes
      - (1) 5,10,15,20, etc.
      - (2) 15,30,60 only

## Appendix II

### Clock Case Characteristics

## EXAMPLES

A. Hood

1. Pediment—original
  - a. Tracery—original
  - b. Treatment of rosettes
    - (1) applied molding
    - (2) inlaid
  - c. Finial—original
    - (1) inlaid “fluting”
  - d. Finial plinth—original
    - (1) veneered/patterned stringing
    - (2) inlaid
2. Crown molding
  - a. Cornice molding—original
    - (1) dentil
    - (2) inlaid dentil
    - (3) other
  - b. Frieze area:
    - (1) solid
    - (2) veneered
    - (3) fret inlay
    - (4) other
  - c. Spandrel area treatment
    - (1) solid
    - (2) veneered
    - (3) inlaid
  - d. Panels above columns
    - (1) veneered/patterned stringing
    - (2) inlaid
    - (3) no panels
3. Columns
  - a. Free-standing
    - (1) all four
    - (2) front two
  - b. fluted/stop-fluted
  - c. inlaid “fluting”
    - (1) stringing
    - (2) patterned stringing
  - d. other
  - e. front two only
4. Tympanum door area
  - a. inlay edging
  - b. molding
  - c. inlay on inside around dial
5. Door
  - a. solid
  - b. veneered/cross-banded
  - c. stringing or patterned inlay
  - d. beaded

Appendix II (Continued)  
Clock Case Characteristics

EXAMPLES

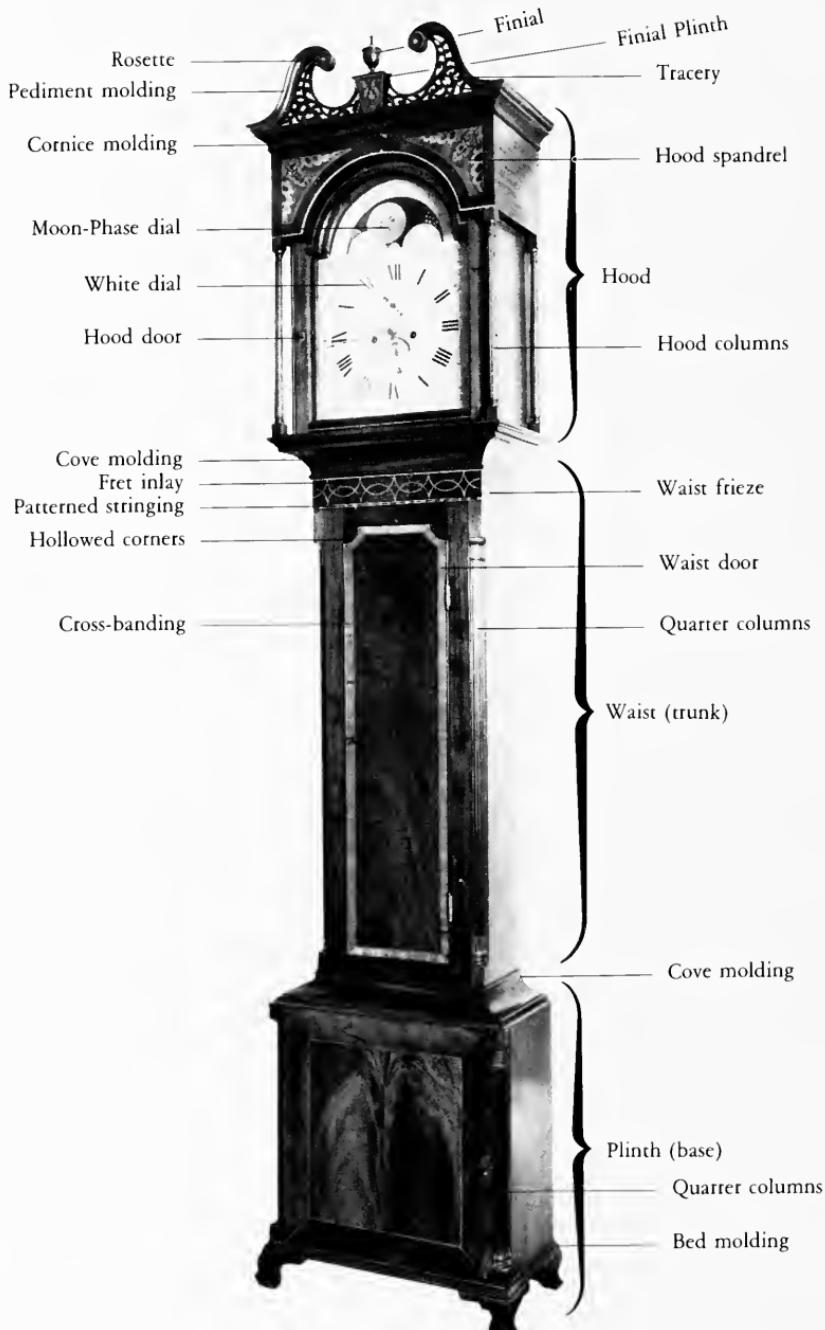
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
B. Waist																
1. cove molding	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2. waist	•							•					•	•		•
a. solid	•															
b. veneered/cross-banded																
c. fret	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
d. patterned stringing																
3. Door	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
a. solid	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
b. veneered																
c. arched																
d. beaded																
e. squared corners																
f. hollowed cornets																
g. cross-banded																
h. inlaid																
(1) oval																
(2) rectangle																
(3) stringing																
(4) patterned stringing																
(5) corner quarter-fans																
4. Quarter Columns																
a. same length as door																
b. fluted/stop-fluted																
c. Tuscan-style capitals																
5. Plinth (base)																
a. inlaid																
6. Base molding																
a. cove																
b. cyma																
C. Plinth (base)																
1. solid																
2. veneered/mitered corners																
3. cross-banding																
4. inlaid																
a. oval																
b. square/rectangle																
c. stringing																
d. patterned stringing																
e. hollow corners																
5. quarter-columns																
a. fluted																
b. stop-fluted																
D. Feet (original)																
1. Ogee																
2. French																

### Appendix III Inlay Characteristics

	EXAMPLES															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Pictorial Inlay																
A. Finial plinths																
1. Urn with 4 leaves	●				●											
2. Veneered with patterned banding						●										
3. Other	●															
B. Rosettes with petals	●	●				●										
C. Spandrel area of hood	●	●				●										
1. Naturalistic grapevine																
a. three clusters on each side	●	●														
b. with triangular-shaped leaf	●	●														
c. with other leaf	●	●														
d. without leaves	●	●														
e. with bowknot at center	●	●														
f. with "loop" at center	●	●														
g. vines cross at center	●	●														
2. Stylized, naive grapevine																
a. three clusters on each side	●	●				●			●	●						
b. more than 3 clusters on each side	●	●				●			●	●						
c. with leaves	●	●				●			●	●						
d. without leaves	●	●				●			●	●						
e. with loop at center	●	●				●			●	●						
3. Vine with leaves and berries																
4. Phoenix																
5. Oak leaves and acorns																
6. Other																
7. No pictorial inlay																
D. Side panels of spandrel area																
1. lobed urn on dark wood block	●	●				●			●	●						
2. 2 grape clusters on a vine	●	●				●			●	●						
3. Bellflowers	●	●				●			●	●						
a. "Baltimore" style—3 husks	●	●				●			●	●						
b. "Baltimore" style—4 husks	●	●				●			●	●						
c. other style	●	●				●			●	●						
d. hanging from a loop	●	●				●			●	●						
e. hanging from a "nail"	●	●				●			●	●						
4. No designated panel	●	●				●			●	●						
E. Pictorial inlay elsewhere on clock																
1. quarter fan on case door	●	●				●			●	●						
2. light wood inlay flower on door	●	●				●			●	●						
3. Shell on base	●	●				●			●	●						

## Appendix IV

### Tall Clock Nomenclature



## FOOTNOTES

1. William Voss Elder, III, and Jayne E. Stokes, *American Furniture 1680-1880, from the Collection of the Baltimore Museum of Art* (Baltimore: Baltimore Museum of Art, 1987), 121; Gregory R. Weidman, *Furniture in Maryland* (Baltimore: Museum and Library of Maryland History, Maryland Historical Society, 1984), 126.
2. Charles F. Montgomery, *American Furniture: The Federal Period, 1788-1825* (New York: Viking Press, 1966), 192.
3. Of the four remaining clocks, three have no name on the dial, and the fourth bears the name of a partnership not listed in usual surveys of clockmakers who either advertised or were listed in the city directories after 1796.
4. For examples of other hood pediment forms being made in Baltimore and Maryland at this same time, see Edgar G. Miller, Jr., *American Antique Furniture*, Vol. II (New York: Dover Publications, Inc., 1966), 916-922. These tall clocks without the horizontal cornice molding have significant similarities to New York, New Jersey, and Delaware clock cases in form and surface ornamentation. Specifically, see plates 1813 and 1815.
5. Baltimore City was not granted a charter until 1797. *Baltimore Furniture, 1760-1810* (Baltimore: Baltimore Museum of Art, 1947), 15.
6. R. L. Raley, "Irish Influences in Baltimore Decorative Arts, 1785-1815," *The Magazine Antiques*, 79 (March 1961):276-279.
7. Weidman, *Furniture in Maryland*, 70, as quoted from La Rochefoucauld-Liancourt, *Travel Through the United States of North America* (London: T. Gidet, 1800) Vol. III, 254.
8. Weidman, *Furniture in Maryland*, 71. The 1810 figure does not include journeymen.
9. Raley, "Irish Influences," *Antiques*, 79:276.
10. As early as 1744 venture cargo shipments of consignment furniture were sent from ports in Massachusetts to southern coastal cities. See Mabel Munson Swan, "Coastwise Cargoes of Venture Furniture," *The Magazine Antiques*, 55 (April 1949):278.
11. For more data on Philadelphia's role in the coastal trade see Kathleen M. Catalano, "Cabinetmaking in Philadelphia, 1820-1840," *Winterthur Portfolio* 13, (1979):81-86.
12. Ian M. G. Quimby, "The Cordwainers Protest, a Crisis in Labor Relations," *Winterthur Portfolio III*, (Winterthur, Delaware: The Henry Francis du Pont Winterthur Museum, 1967), 96.
13. Ibid. At the 1806 labor trial in Philadelphia between the journeymen cordwainers' trade association and their masters/merchants, it was estimated that a shop with 24 journeymen could earn the shop owner approximately \$15,000 per year.
14. There is evidence that some artisans were also directly involved in the coastal trade, but not to the extent that the merchants or middlemen were. See Catalano, "Cabinetmaking in Philadelphia," 82.
15. *The Cabinetmaker's London Book of Prices* (London: W. Brown and A. O'Neil, 1793), A2.

16. For general information on the technology in Maryland clockmaking see Edward F. Lafond, Jr., "Some Comments on Repeating Striking Systems Found on Maryland Clocks," 60-63; and Jane Webb Smith, "Clock and Watchmaking in Maryland," 47-58, in Jennifer Faulds Goldsborough, *Silver in Maryland* (Baltimore: Museum and Library of Maryland History, Maryland Historical Society, 1983).
17. In America these were known as "wag-on-wall" clocks. "It seems that a 'wag-on-the-wall' clock consisted of a dial and works intended to be put in a grandfather clock case, but which were denied that protection from dust and was hung on a wall with its works exposed." Miller, *American Antique Furniture*, Vol. II, 1006-1007.
18. Brian Loomes, *White Dial Clocks* (North Pomfret, Vermont: David & Charles, Inc., 1981), 33.
19. Nathaniel Munroe, No. 25 Howard Street, advertised in the 11 November 1818 issue of Baltimore's *The Maryland Censor* and also listed his wares in the 1819 city directory.
20. *Baltimore Daily Repository*, 20 November 1792.
21. Of these twenty inlaid cases, one of the examples unavailable for study belonged to the family of William Hebb of "Porto Bello," St. Mary's County, Maryland. The inventory of William Hebb's father, Vernon Hebb, was taken 10 April 1796 and totalled £4520. The elder Hebb owned 83 slaves as well as "1 mahogany framed clock" appraised at £18.15.0, or approximately \$90.00. This tall clock has eagles inlaid in the spandrels and belongs to the urn panel group. Maryland Hall of Records, estate inventories, microfilm WK 288-289, 87.
22. The services of the glass merchant were also required by cabinetmakers who made tall clock cases. The "white glass" preferred for windows and clock doors was for the most part imported, although there were a few local manufactories both in New Jersey and Philadelphia:  
"A white glass manufactory has lately set foot in New Jersey, and the glass pronounced equal to the English White Glass and is sold here considerably cheaper. [*Maryland Journal*, 1 July 1788.]"  
"Glass for pictures, clockfaces, &c. of the following sizes, viz 22 by 30; 21 by 28; 18 by 22; 15 by 18; 14 by 16; and 12 by 15 inches. The above is imported White Glass—will be cut to any dimensions under the size and sold by John Proctor, painter, Market Street. [*Maryland Gazette*, 12 January 1790.]"
23. All inventory information compiled by Gregory R. Weidman, *Furniture in Maryland*, pp. 74, 96, 129, 158, 145, 165, 126 respectively.
24. Loomes, *White Dial Clocks*, 35-6, 136.
25. The Gilbert Bigger dial on clock number 1 is the only example in this group with that individual's signature; Bigger worked from 1783 to 1816 at 115 Baltimore Street. The Peter Mohler clock movement in clock number 6 is dated 1797 on the seat board; this predates his 1802-27 city directory listing as a "brass founder" at 22 Harrison Street. There is another Baltimore tall clock related to this group with a movement stamped "P. MOHLER" on the front plate three times; this Mohler clock is on loan to the Maryland

Historical Society. See Goldsborough, *Silver in Maryland*, 173; MESDA Research File (MRF) 10,057.

26. John Fleming and Hugh Honour, *Dictionary of the Decorative Arts* (New York: Harper & Row, Publishers, 1977), p. 261, s.v. Ébéniste.
27. *Federal Gazette and Baltimore Daily Advertiser*, 8 November 1800.
28. Administration accounts, Thomas Barrett estate, Volume 14, p. 183. All estate data is in the Maryland Hall of Records, Annapolis, Maryland. Baltimore cabinetmakers who owed the estate were Combs and Jenkins, James Martin, Coleman and Taylor, Warrick Price, James Davidson, William Faris, William Harris, Nathaniel Hynson, William Jones, William Singleton, and Henry Purcell.
29. Estate inventory, Thomas Barrett, Volume 20, p. 451.
30. Account of sales, Thomas Barrett estate, Volume 2, p. 688-689. "Banding" refers to patterned stringing produced by specialists, not cross-banded veneers that a journeyman could be expected to execute.
31. John Henry Hill, "The Furniture Craftsman in Baltimore, 1783-1823," Master's thesis, University of Delaware (Winterthur), p. 158.
32. *American and Daily Advertiser*, 22 November 1800.
33. *American and Commercial Daily Advertiser*, 18 October 1806.
34. The firm of John Dewhurst and Son was listed in the Boston city directories from 1805-07, the same time as Vance's advertisement. The "stringing makers" on Salem Street continued as such until 1816. In Hewitt's survey of 374 card tables and 100 patterned banded inlays, Baltimore tables had seventeen inlays in common with Boston/ Salem tables, none in common with Philadelphia and only three in common with New York. Benjamin A. Hewitt, Patricia E. Kane, and Gerald W. R. Ward, *The Work of Many Hands: Card Tables in Federal America 1790-1820* (New Haven: Yale University Art Gallery, 1982), 189.
35. *American and Commercial Daily Advertiser*, 25 November 1808.
36. Ibid., 10 July 1810. There appears to be no connection between John Dewhurst in Boston and George Dewhurst in Baltimore. John's son's name was Thomas and was 16 years old in 1812. Kenneth Scott, compiler, *British Aliens in the United States During the War of 1812* (Baltimore: Genealogical Publishing Co., Inc. 1979), 18.
37. *The Cabinetmakers' London Book of Prices*, title page.
38. Thomas Sheraton's *The Cabinet-Maker and Upholsterer's Drawing Book* (London: 1793), was the only one of the widely-circulated design books to even include the clock case, Plate 20.
39. *The Cabinet-Makers Philadelphia and London Book of Prices* (Philadelphia: Snowden and McConkle, 1796), 130.
40. Cabinetmaker William Camp advertised the theft of his copy of the *London Book of Prices* in the 14 August 1807 *Baltimore American*. Weidman, *Furniture in Maryland*, 94, fn. 81. Other design books owned in Baltimore were Ince and Mayhew, *The Universal System of Household Furniture* (London: 1759-1762), and Robert Manwaring's *The Cabinetmaker and Chair-Maker's Real Friend and Companion* (London: I. Taylor, 1775); Weidman, *Furniture in Maryland*, 77.

41. Montgomery, *American Furniture: The Federal Period*, 23; examples of inlaying work available in the price books can be seen in several of the Tables in the *Cabinetmakers' London Book of Prices*, 1793, Table 14, "Price of Forming Ovals or Circles by Strings"; Table 16, "Tables of Banding"; and Table 21, "The Price of Planting Astragals on Doors, Drawer Fronts, Ends, Etc."; and in corresponding tables 10, 4, and 21 in *The Cabinet-Makers Philadelphia and London Book of Prices* (Philadelphia: Snowden and McConkle, 1796).
42. Ibid. One pound was equal to \$2.66 2/3 in Pennsylvania currency.
43. Baltimore County, Estate Inventory, Charles Tinges, Vol. 30, p. 504. Both Peter Mohler and William Thompson were debited with small debts due Tinges' estate, \$4.25 and \$1.00 respectively. Vol. 31, p. 391.
44. Baltimore County, Estate Inventory, Gerrard Hopkins, Vol. 20, p. 399.
45. Conversation between clock historian Edward F. LaFond of Mechanicsburg, Pennsylvania and the author on 28 June 1987.
46. Clock number 15 formerly was fitted with a pediment which was not correct for the case. See Lockwood Barr, "William Faris, Annapolis Clockmaker," *Antiques* (April 1940), 74. This addition has since been removed and the proper pediment has not been reconstructed due to restrictions of ceiling height. The clock most likely had a pediment similar to that on clock number 11.
47. John Gloag, *A Short Dictionary of Furniture* (London: George Allen and Unwin Ltd., 1977), s.v. ébéniste, ebonist; John Fleming and Hugh Honour, *Dictionary of the Decorative Arts* (New York: Harper & Row, Publishers, 1977), s.v. ébéniste, menuisier.
48. Hill, "The Furniture Craftsmen in Baltimore," 54, from Baltimore Orphans Court Proceedings, indenture number 12WB3, p. 36.
49. Weidman, *Furniture in Maryland*, 94.
50. Hill, "The Furniture Craftmen in Baltimore," 276.
51. For a Kentucky example see MRF 11,862; for other Baltimore examples see MRF 9436, 10,384, and *Antiques*, September 1930, 211.
52. Montgomery, *American Furniture: The Federal Period*, 31.
53. Hewitt, *The Work of Many Hands*, 74-75, 81. The other centers in the survey were New Hampshire, rural Massachusetts/ New Hampshire, Newburyport and Salem, Massachusetts, the Boston area, Newport, Providence, Connecticut, New York, the Philadelphia area, and Annapolis; Ibid., 189.
54. Montgomery, *American Furniture: The Federal Period*, 436.
55. A wider version of this diagonal pattern is seen on the top of a pier table in the collection of the Baltimore Museum of Art; see Elder and Stokes, *American Furniture 1680-1880*, 159.
56. Ibid., pp. 103-104, 150. This source illustrates two additional pieces of Baltimore furniture, a cylinder desk and a sideboard, which utilize the same pattern of border inlay.
57. Hewitt, *The Work of Many Hands*, 82-83.
58. Baltimore County, Account of Sales, Thomas Barrett estate, Vol. 2, p. 688-89.

59. Thomas Coulson became a glasspaper (sandpaper) manufacturer. He advertised in the 24 December 1817 *American Commercial Daily Advertiser* that "he had moved his shop . . . but that his glass paper could be purchased at Mr. William Vance's Plane Maker, North Charles Street." Vance has also sold banding imported from Boston in 1806 (q.v. fn. 34).
60. Baltimore County, Account of Sales, Thomas Barrett estate, 688-689.
61. Personal correspondence with Benjamin A. Hewitt 24 July 1987 regarding the conch shell on clock number 16:

"If the conch inlay on the Patterson case is of a size which would fit on the pilaster of a card table, I believe the inlay originated in England. Conch inlays are far less common on American than English tables. One conch inlay is shared by an American card table and a clock made in Bristol, England. Those found on English and American card tables correspond in construction method, size, and motif. . . . If conch inlay of this size had been produced in Baltimore, it would be found on many more Baltimore card tables.

On the other hand, conch inlays of larger size found on the top of various forms of furniture, including card tables, pier tables, and sideboards, were probably produced in Baltimore because they are far more common from Baltimore than any other region.

The conch shell on clock number 16 is larger than one on the pilaster of a card table. A comparison of pictorial inlays on American and English furniture has not been systematically conducted. Occasional discoveries such as the card table and the English clock with matching inlays are inconclusive. Objects considered to be imports, such as tea caddies or knife boxes with inlays very similar to those on Baltimore furniture, raise more questions than they answer."

62. Patricia E. Kane, "Design Books and Price Books for American Federal Card Tables," *The Work of Many Hands*, 40 (q.v. fn. 42); Weidman, *Furniture in Maryland*, 77.
63. Montgomery, *American Furniture: The Federal Period*, 296, 298-300, figs. 262 and 263.
64. Early evidence of the popularity of the bowknot as a Neoclassical motif in other media is an embroidered example on a bedcover, c. 1780, which descended in the Diggs family of Maryland. MRF S-4367. Research courtesy of Bradford L. Rauschenberg.
65. According to Helen Comstock, the term "bellflower" was used in American publications by 1900. "There is a very good reason for adopting it: a familiar object in many American homes was pressed glass in the bellflower pattern, one of the most popular ever issued, and the shape of the flower bore an accidental resemblance to the husk on Hepplewhite furniture." Helen Comstock, "The Bellflower in Furniture Design," *Antiques* (August 1955), 130-133; *Ibid.*, 130.
66. *Baltimore Furniture*, 1760-1810, 36 and 48.21.
67. *Ibid.*, 112-113.
68. William Voss Elder, III, and Lu Bartlett, *John Shaw, Cabinetmaker of Annapolis* (Baltimore: Baltimore Museum of Art, 1983), 115-121, 138-147. While Shaw's work falls within the first part of the 1795-1815 period of

study, it is assumed that he purchased his inlaid shells in Baltimore or imported them directly from England, since no inlay makers have been recorded in Annapolis.

69. A c.1790 New York looking glass with the same motif was advertised by David Stockwell in *Antiques*, January 1962; a similar shell may be seen on 1792-96 tall clock with a Simon Willard movement recorded in the DAPC file, Henry Francis du Pont Winterthur Museum. See also J. Michael Flanigan, *American Furniture from the Kaufman Collection* (Washington, D.C.: National Gallery of Art, 1986), 224-225.
70. Hewitt, *The Work of Many Hands*, 84.
71. Thomas Chippendale, *The Gentleman and Cabinet Makers Director*, third ed., 1762, Plates CLXVII, CLXIX, CLXXIV, CLXXVIII, and CXL.
72. William Paine, *The Practical House Carpenter, or the Youth's Instructor* (London: 1790), Plate 28.
73. For the sideboard see MRF S-7726 and *Baltimore Furniture, 1760-1810*, catalogue no. 40; for two of the tall clocks see *Antiques* (May 1940), p. 234, and G. K. S. Bush advertisement, *Antiques*, June 1983, p. 1184. All of the known clock cases with phoenixes have works retailed by William Thompson, but not all cases relate to this group.
74. See footnote 61 for Hewitt correspondence on conch shell inlays.
75. Jonathan L. Fairbanks and Elizabeth Bidwell Bates, *American Furniture, 1620 to the Present* (New York: Richard Marek Publishers, 1981), 230. In the description of a secretary bookcase, attributed to Salem cabinetmaker Mark Pitman, (1779-1829), the authors state:  
 "The only ornamental detail of any consequence is an inlaid panel in the pediment showing a beetle crawling out of a shell. This motif occurs on several examples of Massachusetts furniture . . . It might be assumed that an inlay specialist in the region was producing this inlay for sale to cabinetmakers from Boston to Newburyport."
76. For the use of large conch inlays on Maryland Neoclassical furniture see Elder and Stokes, *American Furniture, 1680-1880*, 133-134, 159-160; MRF MT 8-28; Elder and Bartlett, *John Shaw*, 118-121, 125, 153-154.
77. For several variations of the smaller sized conch shells see the back cover of *Antiques* (advertisement of Shreve, Crump, and Lowe), September 1984.
78. For Baltimore Empire silver, see Goldsborough, *Silver in Maryland*, 93, 95, 109, 130. Josiah Wedgwood was designing lobed ceramic vessels in the 1780s.
79. The side panels on the Hebb family tall clock have three bellflowers and the urn, but the inlay in the spandrel area is an adaptation of the American eagle, not a vine of any kind.
80. Elder and Stokes, *American Furniture, 1680-1880*, 121.
81. Pierre d'Hancarville, *Etrusques, Grecques, et Romaines Tirees du Cabinet de M. Hamilton, envoyé extraordinaire de S. M. Britannique à cour de Naples* (Florence: 1781), Plates 48 and 130. A vine very similar to the one on clock numbers 11 and 15 is illustrated on a vase from the collection of Sir William Hamilton, English envoy to Naples, Italy in 1766.
82. F. Van der Mer and Christine Mohrmann, *Atlas of the Early Christian World* (London: Thomas Nelson and Sons, 1958), 101, 132.

83. Joan Evans, *Pattern, a Study of Ornament in Western Europe, 1180-1900* (Oxford: The Clarendon Press, 1931), 41.
84. One exception which does illustrate the use of the grapevine on English furniture is William Ince and John Mayhew, *The Universal System of Household Furniture* (London: 1762), Plates LXXV and LXXXIII; Samuel McIntire owned the 1796 edition of Paine's *The Practical House Builder* at the time of his death in 1811. Edwin Hopkiss, *Three McIntire Rooms from Peabody, Massachusetts* (Boston: Museum of Fine Arts, 1931), 15.
85. William Voss Elder, III, *Baltimore Painted Furniture, 1800-1840* (Baltimore: Baltimore Museum of Art, 1972), 36; Weidman, *Furniture in Maryland*, 180; Ibid., 176-178.
86. Stephen Badlam, working in Lower Dorchester Mills, near Boston, commissioned local carvers to embellish the legs of several of his pieces with carved grapevines. DAPC Files, Henry Francis du Pont Winterthur Museum.
87. See MRF MT 8-49 for decorated quarter fans.
88. For other examples of these inlays see: Montgomery, *American Furniture: The Federal Period*, 436; Hewitt, *The Work of Many Hands*, pictorial inlay no. 138, p. 78; MRF MT 8-49, inlay on prospect door.

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